



# THE PRACTITIONER

THE LEADING MONTHLY MEDICAL JOURNAL  
FOUNDED IN THE YEAR 1868

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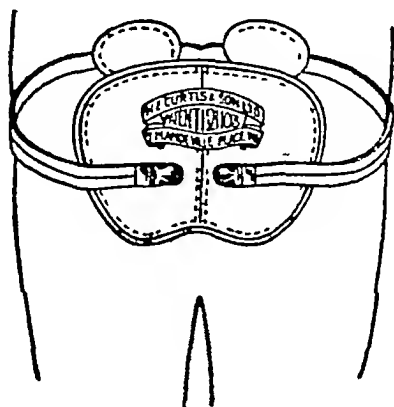
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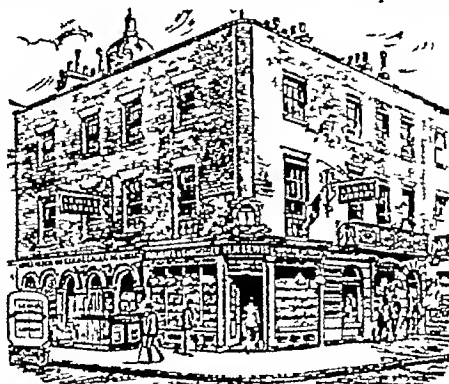
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The annual value of the Bursaries, Prizes, Scholarships and Fellowships in the Faculty of Medicine amounts to about £3,600 and that of the other Bursaries etc. tenable by students of Medicine amounts to about £1,520.

### POST-GRADUATE INSTRUCTION

Courses of Instruction are given for the Degrees of B.Sc. and D.Sc. in Public Health and for the University Diplomas in Public Health, Tropical Medicine and Hygiene and Psychiatry. These Diplomas are open to approved registered practitioners as well as to graduates in Medicine and Surgery of the University.

The University also takes part in the Courses given under the auspices of the Edinburgh Post Graduate Courses in Medicine.

In the departments of the Faculty of Medicine provision is made for research by students of graduate standing.

In the University laboratories facilities will be provided for candidates for the Degree of Ph.D. whose applications to engage in research have been accepted by the Senatus.

A Syllabus and further information as to Matriculation and the Curricula of Study for Degrees etc., may be obtained from the Deans of the Faculty of Medicine and for Degrees in the Faculties of Arts, Science, Divinity, Law and Music from the Deans of these Faculties or from the Secretary and full details are given in the University Calendar published by James Thin, 55 South Bridge, Edinburgh.

Price by post 6s.  
June 1926

By authority of the Senatus W. A. FLEMING Secretary

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W J DILLING, Dean

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*Details may be obtained from the Dean—*

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Full particulars from GIBBON FITZ GIBBON M.D. Master Rotunda Hospital

# UNIVERSITY OF BRISTOL.

## FACULTY OF MEDICINE

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The University grants the Degrees of Bachelor of Medicine and Bachelor of Surgery (M B Ch B), Master of Surgery (Ch M) Doctor of Philosophy (Ph D) Doctor of Medicine (M D), Bachelor of Dental Surgery (B D S) and Master of Dental Surgery (M D S), as well as diplomas in Public Health (D P H) and Dental Surgery (L D S)

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The Winter Session begins on October 1st and the Summer Session on May 1st, but students can enter at any time

Further information may be obtained from the Dean of the Medical School

ANTHONY FEILING M.D., F.R.C.P.,

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# INDIAN MEDICAL SERVICE

## SPECIAL RECRUITMENT, 1926.

The Secretary of State for India announces that a Committee will be held at the India Office in the near future, for the selection of European candidates for direct appointment to permanent commissions in the Indian Medical Service on special terms which include a gratuity of £1,000 after six years' service, or £2,500 after 12 years' service, together with free return passage to any officer so appointed who no longer desires to remain in the service. Otherwise the terms will be as detailed below:—

### APPOINTMENT

Candidates must be under 32 years of age at the time of application, and must possess qualifications registrable in Great Britain and Ireland under the Medical Acts now in force.

### CONDITIONS OF SERVICE

Up to the present time Indian Medical Service officers have been employed both in civil and military Departments of Government, and have been interchangeable between the two. The practice as regards employment in the civil and military side of the Service has been as follows:—

At the beginning of his career an officer was employed on the military side, which has medical charge of the Indian Army. If he remained in military employ he held a post on the staff of a station hospital, or a specialist post, or a post on the administrative staff of the Army, promotion being on a time scale up to the rank of Lieutenant-Colonel and by selection to the ranks of Colonel and Major General. He could however, if he chose, apply, after two years' Indian military service, to be registered as a candidate for transfer to the civil side, from which appointments are made to civil surgeoncies, established at the principal civil centres to provide for the medical needs of civil officials and for general medical administrative purposes and to the specialist services (for example, public health, bacteriological and research departments, and the professorships at the medical schools). Such transfers normally took place after about seven years' service in military employment.

The Lee Commission has, however, recommended certain changes in the organization of the Medical Services in India, and in view of their recommendations only military employment can be guaranteed to officers entering the Indian Medical Service at the present time. It is, however, guaranteed that they will be eligible for civil employment under such conditions of service as may be made applicable to officers in future appointed to the Indian Medical Service as a result of decisions taken on the Lee Commission report.

### PRIVATE PRACTICE

Executive medical officers in both civil and military employment may attend persons unconnected with Government service provided their duty admits of it. Candidates are, however, informed that while serving on the military side the opportunities for private practice are not great.

### WAR SERVICE

Service during the war as a medical or combatant officer or in a position usually filled by an officer counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

### PAY:

The monthly rates of pay for European officers in the Service are as follows:—

Rank; Service in Rank	Basic Pay	OVERSEAS PAY		Year of Total Service
		If drawn in Sterling	If drawn in Rupees	
	Rs			
LIEUTENANT	500	—	150	1st
		—	150	2nd
		—	150	3rd

CAPTAIN—				
1 During first 3 years service as Captain	650	150	4th	
2 With more than 3 and less than 6 years' service as Captain	750	150	5th	
3 With more than 6 years' service as Captain	850	150	6th	
		250	7th	
		250	8th	
		250	9th	
		250	10th	
		250	11th	
		300	12th	

MAJOR—				
1 During first 3 years' service as Major	950	—	—	—
2 With more than 3 and less than 6 years' service as Major	1,100	—	—	—
3 With more than 6 years' service as Major	1,250	300	13th and over	

LIEUT.-COLONEL—				
1 Until completion of 23 years' total service	1,500	—	—	—
2 During 24th and 25th years' total service	1,600	—	—	—
3 After completion of 25 years' total service	1,700	—	—	—
4 When selected for increased pay	1,850	—	—	—

N.B.—Until the completion of 23 years' total service basic pay is regulated according to rank and service in rank (columns 1 and 2) which, owing to the system of accelerated promotion may be in advance of the time scale of promotion. Overseas pay is regulated solely with reference to length of total service (column 6).

In addition to the above, there are a number of appointments as Colonels on Rs 2,200 to Rs 2,500 according to the appointment held, and as Major General on Rs 2,750. The appointment of Director of Medical Services in India, carrying pay at Rs 3,200 per mensem, may also be held by an officer of the Indian Medical Service.

It may be pointed out to intending candidates that the initial rates of pay for the Indian Medical Service as for all Government Departments are based on the assumption that the majority of newly appointed officers will be bachelors. It is also the case that an officer when junior is liable to more frequent changes of station than later on in his service, and he may therefore be put to considerable expense for transfers if he has a family. Officers, therefore, who join the Service married may have considerable difficulty in living within their pay during the first few years of their service.

EXTRAS.—In addition to the above rates, officers in military employment, when in command or second in command of the larger station hospitals, receive special allowances. On the civil side, there are Public Health, Bacteriological, Research, and Professorial appointments carrying special enhanced rates. Special rates of pay are attached to the administrative appointments open to officers in both branches of the Service.

### OUTFIT ALLOWANCE

Officers on appointment will receive an outfit allowance of £50 subject to certain provisions as regards previous commissioned service in any branch of His Majesty's Forces.

Continued on page xv

**INDIAN MEDICAL SERVICE—Continued from page xiv****PENSIONS**

The rates of pensions are as follows—

Service	Rates per annum	Service	Rates per annum
After 17 years	£400	After 23 years	£620
" 18 "	£430	" 24 "	£660
" 19 "	£460	" 25 "	£700
" 20 "	£500	" 26 "	£750
" 21 "	£540	" 27 "	£800
" 22 "	£580		

The above rates are subject to revision upwards or downwards, to an extent not exceeding 20 per cent. in all, on account of a rise or fall in the cost of living as compared with the year 1919. A deduction of 4 per cent. on this account has already been made. A further revision may take place on the 1st July, 1927, and every three years thereafter.

There are additional pensions ranging from £125 to £350 per annum for officers who have held high administrative appointments as Colonels or Major Generals. These pensions are not subject to the reduction mentioned above.

**PASSAGES**

Officers on appointment are, when possible, provided with passage to India by transport. When such accommodation is not available passage at the public expense is provided by private steamer, or passage allowance is granted if preferred. The wives and families of officers who are married prior to the date of the officer's embarkation on first appointment to the Indian Medical Service will also be provided with passage to India at the public expense under the same conditions as those applicable to the officers themselves.

Indian Medical Service officers are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their career.

**INCREASED CADRE**

The allowance for furlough has been increased to 25 per cent. and the cadre has been increased 2½ per cent. for study leave, making a total of 27½ per cent. There are special allowances for officers whilst on study leave.

Further particulars can be obtained on application to the SECRETARY MILITARY DEPARTMENT INDIA OFFICE, WHITEHALL LONDON S.W. 1. Letters should be marked "Recruitment for I.M.S."

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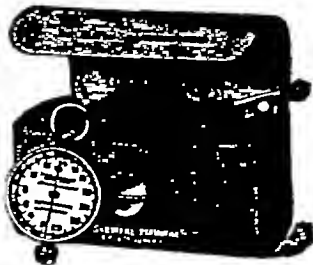
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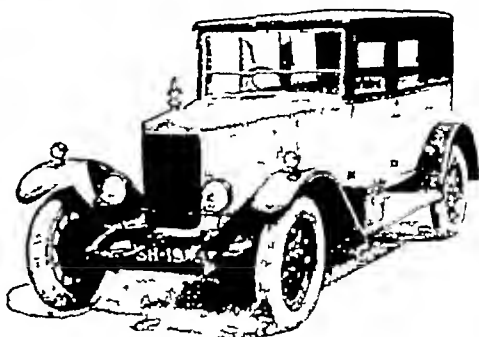
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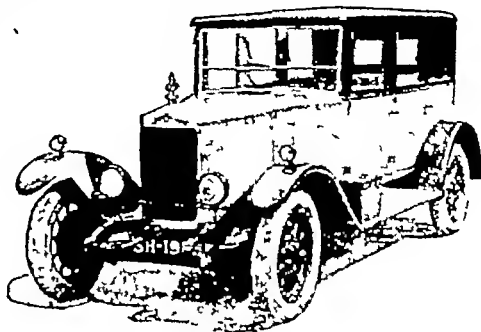
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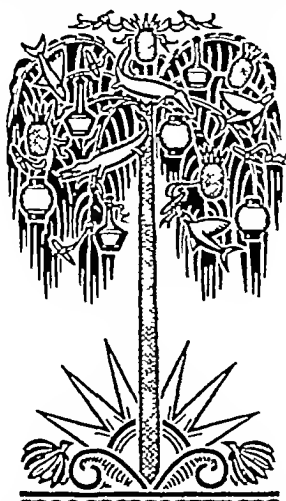
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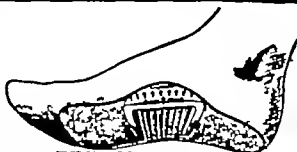
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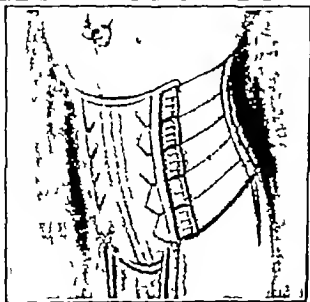
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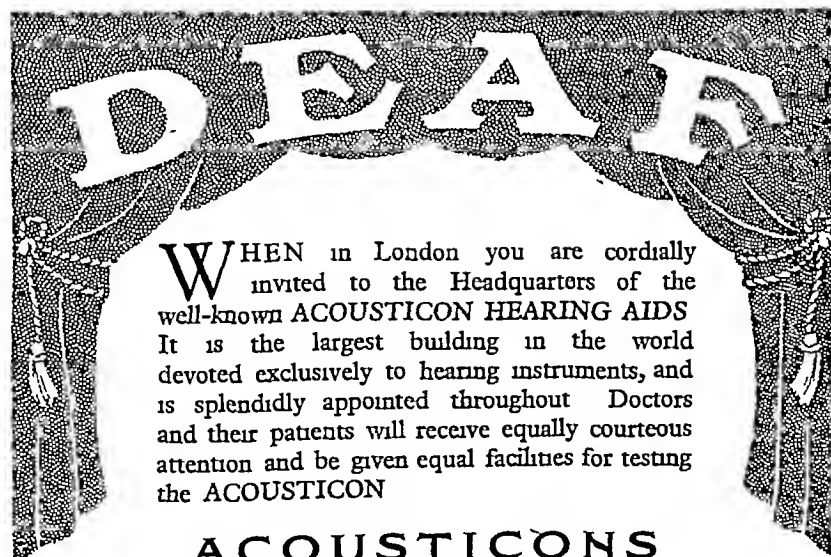
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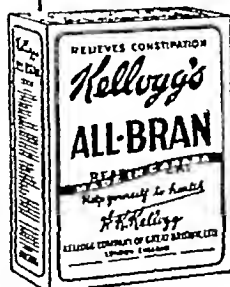
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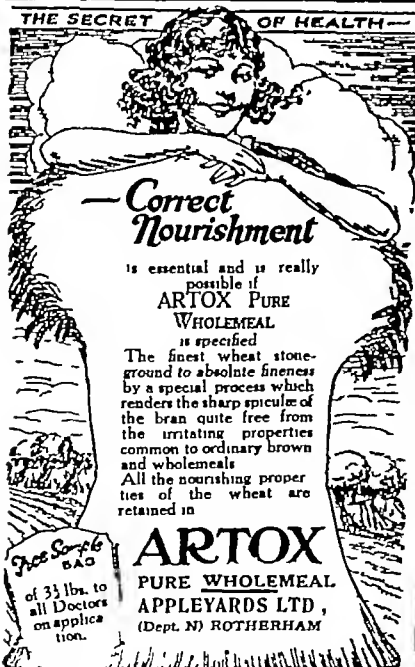


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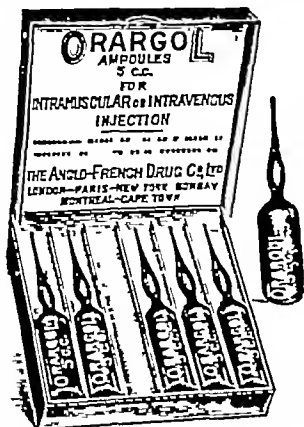
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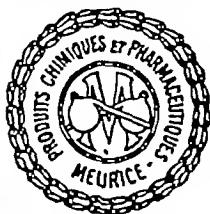
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*Vide 'Treatment of Influenza,' Scalpel 4th February, 1922**Indicated in acute cases of*

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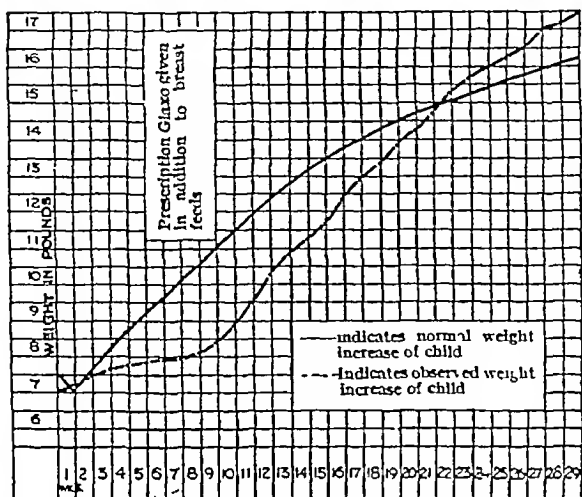
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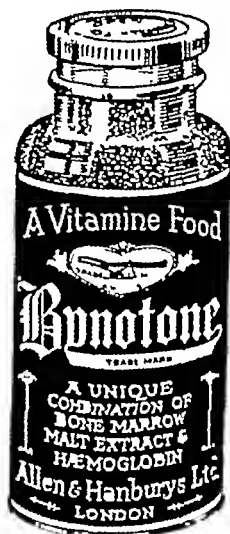
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bacterial cells and toxins

(Vide pp 177-180, "British Medical Journal" July 31st 1926)

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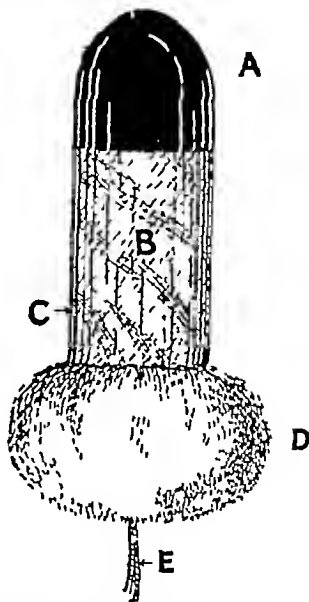
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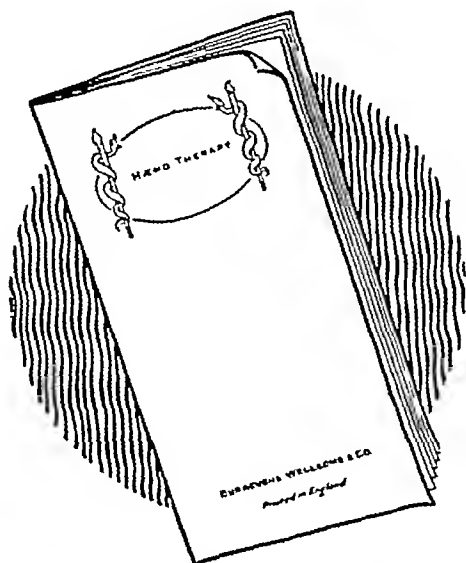


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# THE PRACTITIONER

SEPTEMBER

1926

## Nasal Sinusitis as a Cause of Toxæmia.

By SIR WILLIAM WILLCOX, K C I E, C B, C M G,  
M D, F R C P

*Medical Adviser to the Home Office, Physician to St Mary's Hospital,  
Visitor for Privy Council, Examinations of the Pharmaceutical Society  
of Great Britain, Assistant Physician, London Fever Hospital, etc*

“**T**OXÆMIA” is now generally recognized in this country as being the most important ætiological factor in the causation of disease. Where a disease is caused by an infection with a known specific organism, such as typhoid fever, diphtheria, pneumonia, tuberculosis, etc., it is so obvious that the symptoms produced are the result of the toxæmia of the known infection that no argument is necessary to emphasize the point.

Examples of toxic manifestations in protozoal diseases are furnished by malaria, syphilis, amœbic dysentery, trypanosomiasis, etc.

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## NASAL SINUSITIS

Considerable attention has been paid during the past few years to the great importance of dental sepsis as the toxæmic cause of a large number of common diseases. It is fully realized that dental sepsis may not only lead to the formation of an acute local inflammatory lesion with the local symptoms of pain, swelling and abscess formation, etc., but that in a much larger group of cases the dental sepsis is latent as regards the production of local symptoms of pain, irritation, etc., and manifests its toxæmic effects by causing disease in other organs. In other words, dental sepsis is commonly latent as regards its local symptoms, but yet produces by means of its toxæmic effects profound pathological changes in the body.

For some years I have paid the closest attention to the toxic factor in disease and have made a special point of carrying out a routine search for possible foci of infection in every case. In this work I have received the constant helpful co-operation from my colleagues at St Mary's Hospital, Mr W. H. Dolamore in the dental aspect, and Mr. Cecil Graham and Mr. Kenneth Lees in the search for nose and throat infections. The great importance of "nasal sinusitis" as a cause of toxæmia and disease in other organs has been increasingly impressed upon me.

All that has been said in regard to the effects produced by dental sepsis in the causation of disease of other organs applies with equal emphasis to nasal sinusitis. A point of the greatest importance is that just as dental sepsis is often latent and can only be demonstrated by radiological methods, so in nasal sinusitis the existence of the focus of infection is quite latent in a large number of cases and gives rise to no local symptoms.

It is easy to overlook an existing nasal sinusitis in a case of chronic disease where other parts of the body are affected, for example arthritis or diabetes, unless

## THE PRACTITIONER

the symptoms exhibited.

Diseases where the proof or specific causal organism is less clearly demonstrable and where there is no evidence of defective function of the important secretory organs, include by far the largest group of diseases, and most of the common ailments come under this category. For example: chronic rheumatic condition, diabetes, hyperpiesia and arterial disease, the various forms of secondary anæmia and possibly pernicious anæmia, many skin diseases, retinitis and many pathological eye conditions, asthma, gout, exophthalmic goitre, colitis, appendicitis, gastric and duodenal ulcer, some diseases of the central nervous system such as combined sclerosis, etc.

In most of these conditions careful search will reveal some definite toxic factor and usually, a definite focus of bacterial infection can be found which acts as a distributing centre for toxins and so brings about the toxæmia and its resulting effects.

In this country the importance of the toxic factor in the causation of common diseases such as those specified is becoming more and more recognized and appreciated. It is interesting to compare in this respect British with Continental medicine. From a personal study of medicine as practised on the Continent I have no hesitation in asserting that the toxic factor in the common group of diseases mentioned is regarded with much greater importance in this country. Sir Almroth Wright has been a pioneer of clinical bacteriology, and it is largely due to his work that the importance of the toxic factor in disease has gained a pre-eminence in British medicine.

There is strong evidence that the lead given by British medicine in the realization of the great ætiological importance of focal sepsis as the toxæmic cause of many of the common and less understood diseases is being appreciated and followed in other countries.

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It is easy to overlook an existing nasal sinusitis in a case of chronic disease where other parts of the body are affected, for example arthritis or diabetes, unless



special search is made Not long ago I made the statement that where no focus of infection is found, as a rule the explanation is that the investigation has not been sufficiently complete, and a focus of infection will usually be ultimately discovered if the search is sufficiently exhaustive I believe this statement to be true, and it applies with especial force to nasal sinusitis

In a considerable number of cases under my care, where the disease has been obviously due to a chronic toxæmia, and where no apparent focus of infection could be found, to my surprise a latent sinus infection has been discovered I am most strongly of opinion that in every case of this kind a systematic expert examination of the nasal sinuses is essential

It must be remembered that often a nasal sinusitis is co-existent with another focus of infection, and the presence of dental sepsis, for example, should not preclude a systematic expert examination of the nasal sinuses

## DIAGNOSIS OF NASAL SINUSITIS.

In acute conditions the clinical symptoms are often sufficiently obvious. The presence of local pain and the neuralgia of infraorbital, dental, supraorbital or frontal type attract attention. The presence of œdema of the cheek, the existence of unilateral nasal discharge, and the presence of pus in the nasal cavity with swelling of the mucous membrane make diagnosis easy.

In the chronic conditions the clinical symptoms may be entirely absent, and though in many cases inquiry will elicit the information of nasal discharge or swallowing of muco-pus, yet in a number of cases even these symptoms are not present Expert examination of the nose is essential

*Radiographic examination* will often reveal opacity to the X-rays in the region of the affected sinus. It must be remembered that the penetration of X-rays is quite different to that of light rays Thus a clear

serous effusion or an oedematous mucous membrane will exhibit some opacity to X-rays, but little to the light rays. Then, again, the thickness of the facial bones varies much in different patients. In a number of cases of latent sinusitis under my care there has been a discrepancy between the radiographic opinion and expert opinion based on transillumination. It will be generally agreed that while radiographic examination is helpful and is of value in the diagnosis of nasal sinusitis yet it is not always decisive. The diagnosis of the presence of pus in an antrum cannot be made with absolute certainty by radiographic examination alone. It is advisable, therefore, that reports should be restricted to statements of fact as to opacity of a particular sinus to X-rays. Conclusions as to the presence of fluid or pus should be avoided in reports.

*Transillumination*, in expert hands, is a valuable means of diagnosis in the case of antral infections, especially if accompanied by rhinoscopic examination of the nasal cavity. This method of investigation, however, does not appear to be always decisive. Variability of thickness of the facial bones, abnormal thickening of the mucosa, neoplasms, etc., may give rise to dimness and doubtful results.

Transillumination is a method of investigation which, with a little practice, can be performed by every practitioner, and in cases of toxæmia of obscure origin it is desirable that it should be carried out as a routine procedure.

Where expert rhinological investigation is not immediately available it appears to me desirable that examination by X-rays and by transillumination should both be carried out, and if both yield a negative result it is probable, in the case of antral infection, that no accumulation of fluid is present in the cavity.

*Rhinoscopic examination accompanied by puncture of the affected sinus* appears to be the only certain

# THE PRACTITIONER

method of diagnosis in some of the latent cases. Examination of the washings with sterile saline will reveal the presence of pus or bacterial infection. This latter method of investigation is only possible by an expert rhinologist.

## ORGANISMS PRESENT.

In acute conditions usually the pneumococcus, *Bacillus influenzae*, or the catarrhal, staphylococcal, or streptococcal organisms commonly present in rhinitis will be found in the affected sinus.

In the latent conditions of sinusitis, where systematic effects are produced in other organs, a streptococcus of the viridans group is usually found. This type of organism is remarkable in its peculiarity of producing little or no local inflammatory condition, but profound changes in other organs of the body by reason of the deported toxins.

## SYSTEMIC EFFECTS

As already mentioned, nasal sinusitis may give rise to exactly the same group of diseases in other organs which are caused by dental sepsis. It is unnecessary to recapitulate these, however, in the present article.

## ILLUSTRATIVE CASES

Some illustrative cases may be quoted as examples.

### *Acute Toxæmia*

1 *Mrs D G* had suffered from attacks of intermittent pyrexia and ill-health from July, 1918, to October, 1921. Paratyphoid fever and pelvic inflammation had been suspected, but found negative. In this case radiographic examination showed an apical infection of the upper left first molar tooth, and opacity of the left antrum. Removal of the infected tooth and nasal drainage of the antrum resulted in rapid and complete cure. The organism found was *Streptococcus viridans*.

2 *Mrs P* In St Mary's Hospital suffering from arthritis of the hands and acute pyrexia of three months' duration. The pyrexia was much too high to be due to the arthritic condition. Opacity of the right antrum was found by X-rays, and the sinusitis was confirmed by Mr Cecil Graham. Puncture of the antrum was

## NASAL SINUSITIS

insufficient to control the pyrexia Nasal drainage of the antrum resulted in an immediate normal temperature, and marked improvement in health and in the arthritis The patient put on one stone in weight in a few weeks Organism present, *Streptococcus viridans*

3 *F B*, age 18 For three years intermittent attacks of pyrexia each lasting for several weeks No evidence of pulmonary tuberculosis Both antra opaque to X-rays and rhinoscopic evidence of sinusitis Organism present, pneumococcus

4 *L B*, age 16 Admitted to St Mary's Hospital in state of collapse on 18.5.26 Upper right first molar tooth had been removed 12.5.26 X-ray examination showed opaque right antrum Operation of nasal drainage by Mr Graham R antrum filled with pus Organism, streptococcus Recovery to normal health rapidly followed the operation

### *Chronic Toxæmia*

5 *Mr G L* Ill-health for several years Headaches and recurrent attacks of colitis Both antra found infected (Transillumination and rhinoscopy) Treatment of the antral condition followed by great improvement in health Organism, *Streptococcus viridans*

6 *Miss S* Ill-health for four years Frequent slight pyrexia in evening T 99.5 Both antra opaque to X-rays Diagnosis confirmed by operation Organism, *Streptococcus viridans* Recovery good

### *Pernicious Anæmia*

7 *Case of pernicious anæmia*, age 58 Chronic antral suppuration, with *Streptococcus viridans* Operation accompanied by blood transfusion Patient made marked improvement

### *Adenitis resembling Lymphadenoma*

8 *Mr W* This case gave a history of marked enlargement of lymphatic glands following an "influenzal" attack in 1921 Admitted to St Mary's Hospital, April, 1925 Marked enlargement of glands of neck and axillæ and of glands in the mediastinum (shown by X-rays) Stridor was present Microscopical examination of the glands showed a chronic inflammatory condition with giant cells, resembling tuberculosis No tubercle bacilli found Tests for tuberculosis negative X-ray examination showed opacity of both antra and right frontal sinus Operation by Mr Graham followed by complete recovery Organism, *Streptococcus viridans*

### *Arthritis*

A considerable number of cases of this disease have been under my care where the infective focus has been clearly antral (*vide* Case 2). A recent remarkable case is worthy of mention.—

9 *F B*, age 18 Lame for six months Admitted to St Mary's Hospital, February 15, 1926 Marked arthritis of both hips with

## THE PRACTITIONER

extensive bony changes shown by X-rays Both antra opaque on radiographic examination Suppuration of antra found at operation by Mr Graham Organism, *Streptococcus viridans* Marked improvement

10 *Mrs G T* Advanced arthritis, March, 1923 In hospital, April, 1924, had been practically bedridden for one year Left antral infection found Operation, improvement Recurrence of symptoms Re-admission, November, 1924 Left ethmoidal sinus infection found Operation followed by cure of arthritis and good general health Organism, *Streptococcus viridans*

### *Diabetes*

A number of diabetes cases have been under my care where the causative focus of infection has been an antral sinusitis In these cases operation on the affected antrum has been followed by marked rise in the carbohydrate tolerance and improvement in the general health (*Vide THE PRACTITIONER*, December, 1923, "The Treatment of Diabetes")

One case deserves mention —

11 *Mrs A C*, aged 23, m, two children Severe diabetes onset August 11, 1923 Admitted to hospital, 21 9 23 Carbohydrate tolerance then low Five septic teeth removed, followed by improvement Patient had recurrence of symptoms and was re-admitted to hospital 26 2 24 X-ray of antra showed opacity on right side At operation suppuration found Drainage effected After operation carbohydrate tolerance rose Markedly glycosuria disappeared This patient had increased in weight by three stone when seen nine months later She had become pregnant Organism, *Streptococcus viridans*

### *Toxic Neuritis*

12 *Mr K R D*, age 58 Seen May, 1926 For the past year had complained of tingling sensation in his hands and feet The hands became white followed by blueness (symptoms of Raynaud's syndrome) Complained of discharge of matter from right nostril Examination by Mr Seymour Jones showed completely dark right antrum on transillumination and on puncture thick pus was found The symptoms in this case appeared to be clearly due to the toxæmia from the focus of antral infection.

### *Early Bronchiectasis*

13 *Mr H G W*, seen March 12, 1925 Ten years previously an acute illness with pyrexia lasting two months When this subsided tonsils were removed Health improved for several years In 1923, ill-health with some pyrexia, infection of the maxillary antra

## NASAL SINUSITIS

found These were operated upon and nasal drainage effected Health improved after this

On February 12, 1925, had an attack of pyrexia while in Germany, pyrexia lasting three weeks A good deal of nasal discharge, much expectoration Pulmonary tuberculosis suspected

At examination on March 12, 1925, a history of the recent expectoration of large quantities of sputum in the morning was given Examination of the lungs showed an area of dullness at the base of the right lung with crepitations An X-ray examination of the chest showed signs of early bronchiectasis of the right lower lobe Examination of the sputum showed a heavy infection with streptococcus of the hæmolytic type No tubercle bacilli present

An X-ray examination of the nasal sinuses showed a heavy marked general sinusitis Mucopus was reported as coming from both antra and from both sphenoidal sinuses and from the right frontal sinuses

This patient was treated with rest in bed, with creosote inhalations and with inoculations of an autogenous streptococcal vaccine The sinusitis completely cleared up and all the symptoms and signs of bronchiectasis disappeared after one month's treatment Patient in good health since

### *Retrobulbar Neuritis and Retinal Hæmorrhages*

14 Mr H Y Seen September 30, 1924, *et seq* In 1922 ethmoidal sinusitis followed by retrobulbar neuritis and retinal hæmorrhage affecting the right eye Some dental sepsis was also present Treatment of the focal sepsis (dental and ethmoidal) has been followed by great improvement Slight impairment of vision of right eye corresponding to the hæmorrhagic lesion remains, but apart from this the health is now normal

Quite a number of cases of nasal sinusitis in medical practitioners have come to my notice The reason of this must be that the patient who is aware of the possibility of this condition has recognized the slight symptoms and by calling attention to them has been fortunate in effecting an early diagnosis

### CONCLUSIONS

1 Nasal sinusitis is relatively common, and should always be suspected and searched for in cases of toxæmia of all kinds where the cause is not apparent

2 In cases of systemic disease which may possibly be due to toxæmic condition, careful search should always be made for any evidence of sinusitis

3 Nasal sinusitis is an important cause of toxæmia,

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and its effects may be very far-reaching and may cause any of the many diverse pathological conditions which are now recognized as resulting from dental sepsis

4. Nasal sinusitis, particularly in chronic cases, often requires operative treatment. The value of the surgical treatment is much more than the treatment of a local anatomical defect or local pathological condition.

Adequate treatment is imperative, since nasal sinusitis is a focus of infection which if left untreated will speedily give rise to serious systemic disease affecting other parts of the body.

5. In the treatment of nasal sinusitis it should always be remembered that one is dealing with a case of toxæmia, usually streptococcal, where the focus of infection is in the nasal sinuses. Each patient is therefore a problem in immunity.

The management of every case should be based upon this view. When operative treatment is decided upon it must be remembered that an auto-infection will follow the surgical measures. In cases where the toxæmia is acute it is therefore best to avoid operation if possible until the acute toxæmic symptoms have subsided.

In chronic cases not too much in the way of operative treatment should be done at one time, so that opportunity may be given for recovery from the resulting auto-infection

Where foci of infection exist in other parts, for example the teeth or tonsils, it is well to allow a sufficient interval of time after a sinus operation before proceeding with the further surgical measures

The human body is frail, and requires gentle and careful handling in order that its immunity and resistance to toxæmia may be constantly on the up-grade when operative measures are being carried out.





of colloid material, and the vesicles are greatly distended. Further changes may occur in such a goitre (1) The thyroid tissue may degenerate, (2) small adenomatous masses may form (the adeno-parenchymatous variety), and (3) a diffuse proliferation of the epithelium lining the acini may occur, the amount of colloid material diminish, and the whole gland become more cellular. In such a case symptoms of hyperthyroidism will develop and the condition may pass on to true Graves's disease.

Parenchymatous enlargements of the gland of the colloid type are very commonly seen at puberty (the so-called adolescent type), and also during pregnancy. It is interesting to note how some people who normally suffer from hyperthyroidism, will during pregnancy exhibit a much healthier appearance and sense of well-being, the result of an increased amount of thyroid secretion. Such enlargements also frequently occur during the menstrual period. Parenchymatous enlargements are also occasionally present at birth, and in quite young children.

In order to arrive at a rational line of treatment for parenchymatous goitre it is necessary to have a knowledge of the etiology and pathology of the condition.

The active principle of thyroid secretion, namely, thyroxin, contains 65 per cent of iodine. The percentage of iodine in colloid goitre is diminished. McCarrison has experimentally proved that

1. Thyroid hyperplasia is readily produced by the use of a diet deficient in iodine.

2. Iodine in minute doses will prevent and cure goitre when administered at the proper time and season.

Goitre may, however, arise when there is plenty of iodine in the food. Gastro-intestinal and other infections may prevent the proper absorption and assimilation of iodine, and the needs of the thyroid depend on many factors, such as age, sex, puberty, menstruation,

## TREATMENT OF GOITRE

pregnancy, infections, excess of fats, etc. The goitre is, therefore, due to the inability of the thyroid to make use of the iodine present, or the amount of iodine is insufficient for abnormal demands, and the thyroid enlargement is the result of the response on the part of the gland to this deficiency. McCarrison has shown that in the presence of bacterial infection definite changes may occur in the thyroid gland, namely, absorption of the colloid material and a proliferation of the epithelium lining the acini. This is the pathological condition found in exophthalmic goitre. It will, therefore, be seen how a simple colloid goitre may pass into the more serious condition found in Graves's disease.

*Treatment*—Medical treatment is indicated in these conditions, and surgical interference is only called for in the following circumstances :

(1) Pressure symptoms, especially dyspnoea; (2) toxic symptoms which have not responded to medical treatment; (3) for cosmetic reasons, if the goitre is very large

Dyspnoea is the result of pressure on the lateral walls of the trachea, which becomes scabbard-shaped if the pressure is bilateral, or the trachea may be kinked acutely when the pressure is chiefly unilateral. Antero-posterior flattening of the trachea is very rare, but occurs in certain cases of intrathoracic goitre.

Dysphagia is uncommon in cases of parenchymatous goitre, as also is pressure on the recurrent laryngeal nerve. It is often stated that involvement of this nerve is a sign of malignant disease. It is certainly more commonly met with in such conditions, but recurrent laryngeal paralysis may occur with large parenchymatous goitres. To illustrate this point I would mention the following case which came under my care :

† A male, aged 19, with gradually increasing goitre for eight months, associated with dyspnoea and some degree of

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fibro-adenoma. If the vesicles enlarge and run into each other large cystic spaces are formed producing the cystic adenoma. If the walls of the vesicles are completely destroyed as the result of an increased accumulation of colloid material, this constitutes a cyst. As would be expected in such cases, the fluid in the cyst is often hæmorrhagic, the result of rupture of small blood-vessels. The only other cyst which is occasionally met with in the thyroid is an hydatid cyst.

There is one variety of adenoma which is chiefly met with in children and young adults, and which is called the "foetal adenoma." It is composed of tissue resembling that of the normal foetal thyroid, showing masses of epithelial cells representing undeveloped and unopened vesicles with numerous vascular spaces. Such tumours rarely grow to any large size. Microscopically they somewhat resemble carcinoma of the thyroid, and in certain cases of reported cure of carcinoma after partial resection of the gland, the tumour removed has undoubtedly been a foetal adenoma.

Adenomata may cause no symptoms, but, on the other hand, the following may be found:—(1) Pressure symptoms may be present depending on the size and position of the tumour, (2) symptoms of slowly developing hyper-thyroidism or toxic symptoms may arise, with cardiac disturbances, etc.; (3) the tumour may continue to proliferate and penetrate its capsule invading surrounding structures, and so become a malignant adenoma. This latter complication is said to be more frequent in the case of foetal adenoma.

With regard to pressure symptoms, deeply placed adenoma in one lateral lobe may produce considerable dyspnœa from pressure on the trachea. This complication may be sudden in the case of a cystic adenoma as the result of a rapid increase in size from hæmorrhage into the cyst. Dysphagia is uncommon.

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dysphagia. There was general parenchymatous enlargement of the thyroid, chiefly involving the right lobe, and complete paralysis of right vocal cord. Extirpation of right lobe and lower third of left lobe was carried out. The weight of the portions removed was 18½ oz. Pathological report. Colloid goitre.

*Operative Treatment.*—This consists in the removal of one lobe, or preferably a portion of both lobes. If one lobe only is removed, the opposite lobe may subsequently diminish in size, but occasionally it increases in size, and the resulting deformity is unsightly.

Again, if one lobe only is removed, the softened trachea having lost its support may become more acutely kinked and so the dyspnoea is increased. A partial bilateral resection is the operation of choice and yields a better cosmetic result. It is well always to leave a portion of the gland close to the trachea on either side in order to avoid injury to the recurrent laryngeal nerves. It should be remembered that the nerve does not lie in the groove between the œsophagus and trachea but a little in front of this along the side of the trachea. It should also be noted that the posterior portion of the gland, especially in cases of parenchymatous goitre, extends round behind the pharynx and œsophagus as far as the mid-line or even beyond it, and so, in delivering the lobe, the finger, keeping close to the surface of the gland, passes in front of the vertebral column in order to reach the inner limit of the goitre.

### LOCALIZED TUMOURS.

Nearly all unilateral and asymmetrical forms of goitre contain either adenomata or cysts. An adenomatous goitre is one in which the enlargement is for the most part due to the presence of definite encapsuled masses of atypical thyroid tissue embedded in the gland. The adenoma is usually associated with a certain amount of parenchymatous enlargement. If the adenoma contains an excess of fibrous tissue it is a

## TREATMENT OF GOITRE

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low down in the neck on one side in whom dysphagia was a prominent symptom. The tumour had grown rapidly, and I diagnosed the condition as probably malignant, since dysphagia is often an early symptom of malignant disease of the thyroid. The tumour proved to be a tense cyst with calcareous areas in its walls.

Superficial adenomata, especially if growing in connection with the isthmus of the thyroid, may attain a very large size without causing pressure symptoms. On the other hand, a small adenoma, if retrosternal or intrathoracic, may produce severe pressure symptoms. This condition will be referred to later. Adenomata are not influenced at all by medical treatment. An adenomatous goitre may diminish in size as the result of a course of iodine, etc., but this will be due to a shrinking of the parenchymatous enlargement which is so commonly associated with the presence of adenomata. All adenomata of any marked size should be removed by operation whether they are associated with complications or not.

*Operative treatment* consists in (1) Resection-enucleation, or (2) enucleation. If the whole of one lobe is involved, extirpation of this lobe should be performed. Resection-enucleation is the operation of choice, and consists in the removal of the portion of thyroid tissue surrounding and containing the tumour. In this case hæmorrhage is reduced to a minimum since artery forceps are placed on the glandular tissue all round the tumour before division of this tissue and removal of the portion of gland containing the tumour. Enucleation implies simple shelling out of the tumour from its bed. Hæmorrhage is more profuse and more difficult to control in this operation. Enucleation is, however, indicated in the case of elderly patients where the thyroid is atrophied and where it is important to leave as much glandular tissue behind as possible.

## INTRATHORACIC GOITRE

A goitre situated behind the inner end of the clavicle

or upper border of the sternum (namely, the retro-clavicular or retrosternal variety), may produce severe pressure on the trachea, displacing and flattening it obliquely, and becoming jammed between the sternum or clavicle and the vertebral column. The goitre may extend well into the thorax reaching as far as the arch of the aorta in certain cases. Such goitres are termed "intrathoracic." Any variety of goitre may be partly or wholly intrathoracic. Adenomata, cysts, and encapsuled masses in connection with old adeno-parenchymatous goitres are much more often intrathoracic than the purely parenchymatous enlargements.

Intrathoracic goitres occur mostly in elderly people, and so have usually undergone a considerable amount of secondary degeneration, for example, fibrosis and calcification. This fact is important, since the presence and extent of an intrathoracic goitre may often be detected by radiography. It is not uncommon for one side of a bilateral goitre to form an obvious tumour in the neck, whilst on the opposite side is an unsuspected intrathoracic goitre, which is the real cause of the dyspnoea and of the engorgement of the veins of the neck, etc.

When operating upon any case of bilateral goitre associated with dyspnoea, whether the goitre be intrathoracic or not, it is important to remember that the smaller or more deeply placed lobe is by its pressure on the trachea the probable cause of the dyspnoea. If the goitre is wholly intrathoracic there will be no external evidence of enlargement of the thyroid, but the goitre may be forced up into the neck when the patient coughs.

I would mention a case of mine in which slight pressure symptoms were present, the patient's chief complaint being that she suffered badly from bronchitis each winter. There was no evidence of enlargement of the thyroid in the neck, but X-rays showed an extensive intrathoracic shadow on the right side reaching as far as the arch of the aorta. I removed a large intrathoracic cyst about the size of a small orange, and it was interesting to note that the

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following winter the patient had no attack of bronchitis

Certain cardiac irregularities and affections, which are difficult to explain, may occasionally be associated with the presence of an intrathoracic goitre.

An operation for removal of an intrathoracic goitre is only rendered possible by the fact that as the goitre grows downwards into the thorax it carries its blood-vessels with it. If this were not so, removal of the goitre would be impossible. Again, most of the main veins lie in front of the goitre, and these must be secured before an attempt is made to remove the tumour. In removing the goitre no instrument must be passed in front of the tumour. A space will always be found posterior to the tumour, and delivery should be attempted from this aspect. A useful instrument, employed by Berry, is an ordinary dessert-spoon, which can be passed into the chest behind the goitre. The rounded bowl of the spoon pushes away the pleura from behind the goitre and helps delivery. In removing intrathoracic goitres, as in other varieties, the golden rule is to be sure that the actual gland surface is exposed and to keep close to the goitre, otherwise blood-vessels and other important structures may be torn. The position of the recurrent laryngeal nerve must be remembered, and this again can usually be avoided by keeping close to the tumour. It is, however, sometimes impossible to avoid damaging the nerve. The most critical moment is when the tumour is being delivered through the upper opening of the thorax, since much pressure is then exerted on the trachea.

I recently operated upon a patient with intrathoracic goitre which presented some difficulty in removal. The patient was a female about fifty years old, with slight stridor, and slight dysphagia. There was marked congestion of the veins of the neck, and the trachea was markedly displaced to the left, and the right vocal cord was partly paralysed. A right-sided goitre was present in the neck, and obviously extended into the thorax. X-rays showed a large shadow which reached the arch of the aorta. The intrathoracic portion of the trachea was greatly displaced to the left also.

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The anæsthetic employed on this occasion was ether, given by the intratracheal tube, about which method I shall have more to say later. The goitre was a large, thin-walled cyst firmly adherent to intrathoracic structures. The adhesions were tough and fibrous, and the cyst ruptured during removal. It was about the size of a man's two fists. I doubt if it would have been possible to remove this goitre had it not been for the presence of an air-way kept by the intratracheal tube, since it was impossible to prevent marked pressure on the trachea during delivery of the goitre.

### EXOPHTHALMIC GOITRE OR GRAVES'S DISEASE.

This is most common in the female sex, is confined mostly to the period of sexual activity, and usually occurs in the earlier part of that time. Exophthalmic goitre may be a primary condition or secondary to pre-existing disease of the thyroid. In the primary state the whole gland is affected, but, as already stated, a parenchymatous or adenomatous goitre may undergo changes resulting in the development of a secondary Graves's disease. Primary exophthalmic goitres are not usually of large size. The microscopical appearances in this condition are very characteristic, the most important features being the complete, or almost complete, absence of colloid material, and the marked proliferation of the epithelium. Such goitres are usually very vascular, with marked pulsation in the thyroid vessels. A loud bruit can often be heard all over the thyroid, and especially over the situation of the superior thyroid arteries. A thrill can often be felt in the gland.

The main symptoms of Graves's disease are

1. Exophthalmos
2. Cardiac symptoms.
3. A thyroid swelling

Exophthalmos is usually bilateral, but a few cases of unilateral exophthalmos have been recorded. Cardiac symptoms include a rapid pulse with palpitation, myocardial changes, auricular fibrillation, etc. Other symptoms include the following. (1) Nervous, for

following winter the patient had no attack of bronchitis

Certain cardiac irregularities and affections, which are difficult to explain, may occasionally be associated with the presence of an intrathoracic goitre.

An operation for removal of an intrathoracic goitre is only rendered possible by the fact that as the goitre grows downwards into the thorax it carries its blood-vessels with it. If this were not so, removal of the goitre would be impossible. Again, most of the main veins lie in front of the goitre, and these must be secured before an attempt is made to remove the tumour. In removing the goitre no instrument must be passed in front of the tumour. A space will always be found posterior to the tumour, and delivery should be attempted from this aspect. A useful instrument, employed by Berry, is an ordinary dessert-spoon, which can be passed into the chest behind the goitre. The rounded bowl of the spoon pushes away the pleura from behind the goitre and helps delivery. In removing intrathoracic goitres, as in other varieties, the golden rule is to be sure that the actual gland surface is exposed and to keep close to the goitre, otherwise blood-vessels and other important structures may be torn. The position of the recurrent laryngeal nerve must be remembered, and this again can usually be avoided by keeping close to the tumour. It is, however, sometimes impossible to avoid damaging the nerve. The most critical moment is when the tumour is being delivered through the upper opening of the thorax, since much pressure is then exerted on the trachea.

I recently operated upon a patient with intrathoracic goitre which presented some difficulty in removal. The patient was a female about fifty years old, with slight stridor, and slight dysphagia. There was marked congestion of the veins of the neck, and the trachea was markedly displaced to the left, and the right vocal cord was partly paralysed. A right-sided goitre was present in the neck, and obviously extended into the thorax. X-rays showed a large shadow which reached the arch of the aorta. The intrathoracic portion of the trachea was greatly displaced to the left also.

## TREATMENT OF GOITRE

and marked cardiac and nervous symptoms appeared, to be followed at a later date by enlargement of the thyroid

*Treatment.*—In the early stages of the disease the treatment is essentially medical. In exophthalmic goitre the iodine content of the gland is low. Iodine can bring about a lowering of basal metabolic rate and heart rate and an increase of body weight. Fraser states that in exophthalmic goitre, however, although small and regulated doses of iodine may be beneficial, yet it is not of much therapeutic value alone, since worry, excitement, etc., may undo all the good effects of iodine. If the patient can lead a quiet life, iodine may help considerably, and may render the patient in a fitter state to stand the operation of thyroidectomy. The beneficial effect of cod liver oil in cases of exophthalmic goitre is without doubt partly due to the comparatively large amount of iodine present. If every case of exophthalmic goitre could be treated by appropriate medical measures, combined with rest, in the early stages of the disease, more satisfactory results would follow. It is only when medical measures have failed that operative treatment should be considered. There is, I think, one exception to this rule, where early operative treatment may be called for, and that is in patients who are quite unable to give up their work and to rest for any long period.

Here, early operative treatment will undoubtedly shorten the period of convalescence. This applies to the hospital class of patient in particular.

In cases of exophthalmic goitre one is guided to a great extent by electrocardiograph records and the basal metabolic rate in arriving at a decision as to whether operative treatment is advisable and also as to the nature of the operation indicated in any particular case. Extensive myocardial degeneration, with auricular fibrillation and a high basal metabolic rate, are contra-indications to the performance of an operation

example tremor and excitability, amounting in severe cases to acute mania, (2) sweating; (3) shortness of breath, (4) diarrhoea, (5) wasting, (6) slight rise of temperature; (7) glycosuria; (8) pigmentation. The most serious signs and symptoms are marked wasting, glycosuria, pigmentation, and diarrhoea. Glycosuria and pigmentation are probably the result of changes arising in the pituitary and suprarenal glands respectively, and possibly other endocrine glands are also affected.

The etiology is still doubtful, and the cause of Graves's disease has been attributed to the following: (1) Primary disease of the thyroid; (2) disease or affections of the central nervous system, (3) changes in the cervical sympathetic system.

It is possible that all of these structures may be concerned in the production of the disease.

The characteristic symptoms of the disease are probably due to both an increased thyroid secretion and a perverted thyroid secretion. This secretion circulating in the body will act directly or indirectly upon the heart, nervous system, etc. The thyroid gland is found to be in a state of hyper-activity, and the secretion is poured out so quickly that the colloid material has no time to collect in the gland vesicles, but the secretion passes into the lymphatics as soon as it is formed. Alterations in the functional activity of the gland may be dependent on influences originating in the central nervous or sympathetic system. Microscopical changes have been described in the superior cervical ganglion of the sympathetic. There are many cases on record of sudden shock or fright being quickly followed by symptoms of exophthalmic goitre. Such cases were common during the air-raids.

The best example of which I know is that of a healthy and well-built man, aged 53 years, who held an important post abroad. His house was burgled one night after both he and his wife had been drugged. He woke up to find his wife lying on the floor apparently dead. The following day his eyes became very prominent,

## TREATMENT OF GOITRE

opposite artery about fourteen days later. The patient is then sent away to a convalescent home or to rest in the country, and after a few months the patient's general condition is often so much improved that the larger operation becomes possible and safe

Following this method, I ligated both superior thyroid arteries in a girl with well-marked symptoms of Graves's disease associated with myocardial changes. After several months' convalescence her general condition had so much improved that she was able to start light work, and at the present time I do not consider that resection of the gland is necessary. This patient a few months after ligation of the vessels attended a spiritual healing service, and when she came to see me in the out-patient department of the hospital she asked me the following question in front of the students: "Can you tell me if the good result that has followed may be due to the healing service that I went to?" I had to reply that I thought we ought, at any rate, to take some of the credit for her improvement.

I do not think that the improvement which often follows ligation of the vessels is entirely due to cutting off the blood supply to the gland, since vascular anastomosis is so free in the thyroid; but I think it is probable when ligaturing the superior thyroid vessels that sympathetic fibres which run with the vessels are also included in the ligature, and destruction of these may also help by cutting off secretory impulses to the gland.

3 *Injection of Boiling Water into the Gland Substance.*—This operation has been practised in America, and an American surgeon once told me that he had had excellent results with this method in very severe cases of Graves's disease which were too bad to stand any other form of operation. The method consists of injecting a syringe-ful of very hot water by means of a fine needle into the gland, with the patient in bed, local coagulative necrosis and destruction of tissue resulting. I have personally had no experience of this method of treatment.

4. *Operations on the Cervical Sympathetic.*—Jonnesco and others advocate excision of the superior cervical ganglion and resection of portions of the sympathetic



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on the thyroid of any magnitude. Marked wasting, diarrhoea, glycosuria, and pigmentation of the skin, must always be regarded as serious complications.

*Operative treatment* resolves itself into (1) Operations on the thyroid gland and its vessels, (2) operations on the cervical sympathetic system.

### OPERATIONS ON THE THYROID GLAND

1. *Resection* —It is important to remove a considerable portion of the gland, namely, the whole of one lobe, the isthmus, and one-third or even a-half of the opposite lobe. Disappointing results are often due to removing too little of the gland. The operation may be done in either one or two stages. Such goitres are extremely vascular, and every means must be employed to control hæmorrhage as much as possible during the operation, since such patients stand loss of blood very badly. A correct anatomical knowledge of the distribution of the thyroid vessels is important, the superior and inferior thyroid arteries, as also the superior, middle, and inferior thyroid veins, should be carefully secured between artery forceps before division. Gentle handling of the gland during the operation will also lessen hæmorrhage, since branches of the thyroid vessels are very brittle and are easily torn in cases of exophthalmic goitre.

2. *Ligation of Vessels* —In severe cases of exophthalmic goitre, preliminary ligation of one or both superior thyroid arteries is an extremely useful adjunct to subsequent thyroidectomy. In bad cases with marked cardiac and nervous symptoms I have found this simple operation to be of the greatest benefit. Preliminary ligation of the inferior thyroid artery is a difficult operation, and it is not often employed. In severe cases my usual procedure is to ligature one superior thyroid artery under local anæsthesia, and if the patient stands this operation well, to ligature the

## TREATMENT OF GOITRE

if the patient subsequently strains or vomits, severe hæmorrhage may result. My usual practice (learnt from Sir James Berry) is to make the patient strain vigorously before closing the skin wound, and straining is difficult to obtain if the patient is under the influence of morphia. Hence also the reason for a light anaesthesia. I have on many occasions found that in an apparently dry wound even large vessels will bleed on straining, and in one case, when I was just about to close the skin wound, a large unsecured branch of the superior thyroid artery started to bleed profusely when the patient gave an extra violent strain.

The incision usually employed for resection or extirpation is the low transverse collar incision, which gives an excellent cosmetic result and can be hidden if necessary by a necklace. After division of the deep fascia by a mesial incision, the infrahyoid muscles may, if necessary, be divided towards their upper attachments on one or both sides. It is important not to divide the muscles low down, since there is a danger of injuring the nerve supply to the muscles which enters the lower portion. Division of the muscles is not always necessary, since they can be well retracted. It is essential in order to deliver a lobe of the gland that one should expose the actual gland surface by separation of the overlying cellular tissue before proceeding to dislocate the lobe, otherwise it will be found most difficult to deliver the goitre and vessels may be torn as the result of manipulations. The finger is then passed behind the lobe, between it and the vertebral column, the posterior thyroid portion of the gland freed and the lobe delivered. For ligation of the superior thyroid vessels, a short incision along the line of the crease of the neck at the level of the upper border of the thyroid cartilage is preferable to a vertical incision along the anterior border of the sterno-mastoid.

In all cases where gland tissue has been incised,

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trunk in certain cases of exophthalmic goitre, but this method has not been employed to any great extent in this country, and I have had no experience of it.

### CHOICE OF ANÆSTHETIC IN OPERATIONS FOR GOITRE.

Some surgeons prefer local anæsthesia, preceded by a hypodermic injection of scopolamine and morphine, and this method is very satisfactory. My usual practice is to employ a light, open ether anæsthesia, preceded by a hypodermic injection of atropine but not morphia, except in special cases. This does not apply to simple ligation of vessels, where local anæsthesia preceded by a hypodermic injection of morphia is quite satisfactory. The only discomfort produced is by traction on the artery when it is being ligatured, but this is momentary. Intratracheal ether is useful in certain cases of goitre with dyspnœa and in certain cases of intrathoracic goitre. A word of warning is necessary, however, since anæsthesia must be deep during the passage of the intratracheal tube, and dyspnœa may be greatly increased during this period and may become alarming. It is always a wise precaution to have a long flexible tracheotomy tube at hand when operating upon any case of goitre associated with displacement of the trachea. The ordinary tracheotomy tube is often not long enough to reach beyond the obstruction. This is especially the case with intrathoracic goitre. Again, with kinking and displacement of the trachea it may be exceedingly difficult to satisfactorily pass the intratracheal catheter which is arrested by the obstruction in the trachea. Rectal ether has also been employed in certain cases, but is liable to cause tenesmus and rectal hæmorrhage.

The reason for not employing morphia as a preliminary injection in operations of resection or extirpation is the following: at the completion of the operation, certain divided vessels may not bleed, and

# Research in General Practice.

By M FORRESTER-BROWN, M.S., M.D

*Surgeon, Children's Orthopaedic Hospital, Bath, Wm Gibson  
Research Scholar, Royal Society of Medicine, late Surgeon,  
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THE subject of research in general practice, its possibilities and difficulties, has been chosen for this article in *THE PRACTITIONER* in the hope of rousing the medical profession, as a whole, to tackle with all its energies a problem which the writer believes to be the most urgent and vital of all those which confront it at the present time.

The exploitation for research purposes of the vast field of general practice is a matter which has been advocated from time to time by distinguished members of the profession, but it has not yet been recognized by the rank and file in its true aspect as the key-position to all further advances in scientific knowledge of disease. The reason for this seems to be that those practitioners who have been loudest in acclaiming the richness of the soil, have largely overlooked the difficulties which interfere with its cultivation, difficulties inherent in general practice under prevailing conditions, and which can only be overcome by cheerful and energetic co-operation on the part of the whole profession.

Most of the brilliant discoveries of modern medicine have been reached by workers who laboured within the limits of a speciality, such as pathology, bacteriology, surgery, orthopaedics, yet, valuable as have been such investigations, the material at the disposal of the specialists represents only a series of rivulets which are lost at each extremity in the bog of general practice. Until efforts are made to drain that vast morass

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drainage of the deeper portion of the wound for twenty-four hours is important, and Kocher's glass tubes are useful for this purpose. Thyroid secretion if pent up in the wound is liable to cause severe toxic symptoms.

In regard to ligatures and sutures, personally I always use very fine silk, Nos 000 or 0000, and a continuous suture of the same material for the skin. The skin suture is removed on the fourth day after operation and as a rule leaves a very inconspicuous scar.

*After-treatment.*—In uncomplicated cases, the patient may be laid almost flat in bed and turned on one side until the effects of the anæsthetic have passed off. The patient is then propped well up in bed. In cases where the trachea has been softened and displaced, the patient should be propped up in bed from the first, and the head kept quite still and straight between sandbags. After all operations for goitre, saline should be freely given per rectum until such time as the patient is able to take plenty of fluid by the mouth. This especially applies to cases of hyperthyroidism and exophthalmic goitre. In uncomplicated cases the patient may be allowed out of bed for a short time on the second day after operation, but in cases of toxic goitre or Graves's disease a more prolonged rest in bed is advisable.

*Complications.*—One of the complications which is said to follow resection of the thyroid gland is tetany. Berry has never had a case of tetany following any of the many operations he has performed for goitre. No case of tetany has so far fallen to my lot, although I have seen a marked case follow an extensive operation on the thyroid. Tetany following operations for goitre is said to be the result of damage to the parathyroids, but if a portion of the thyroid in the region of the hilus of each lateral lobe be always left, it is doubtful if the parathyroids will be interfered with to any degree.

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methodically and thoroughly, a large part of all other research work will inevitably remain incomplete.

*The Nature of the Material available in General Practice.*—It is probable that the specialist, who has never been a general practitioner, and the general practitioner, who has never taken up a specialty, have neither of them realized the full value of the material available in general practice. The specialist tends to see cases in an advanced and typical stage, and has no means of knowing whether the same disease could be diagnosed in its earliest beginnings. He also fails, all too frequently, to see the results of his operations as they manifest themselves to the end of the patient's life. On the other hand, the general practitioner sees every week hundreds of cases, which to him appear trivial, since he has not the training to recognize amongst them those which represent the embryo stage of various diseases whose advanced stages were familiar to him in student days. The attitude of the general public aggravates the position, because the patient at present only associates the need for a specialist with certain gross features of disease, so that the zealous practitioner, who wishes to call in a consultant for an early, ill-defined case, risks serious damage to his professional reputation and an accusation of unwarrantable ignorance, whereas, if the patient recovers with, or in spite of, his own treatment, his reputation is pleasingly enhanced. Moreover, nearly half the population are too poor to afford a specialist's fee, except under pressure of an obvious emergency, while they are too proud to attend a charitable institution and to submit to the discomforts at present associated with such attendance.

The wonderful material within reach of the general practitioner will be evident to us, if we consider that he may have a given individual under his observation for some thirty or forty years, and will also have the

chance of studying all the branches and several generations of numerous families. These advantages, unfortunately, are almost neutralized by certain obstacles, which, though surmountable by genius, are sufficient to deter the practitioner of average intelligence and physique, and which, in the writer's opinion, have not been sufficiently stressed by the advocates of research, such as Sir James Mackenzie.

It is impossible to enumerate all the subjects which might profitably be investigated in patients who are attended by general practitioners, whether entirely or in part, but it is easy to point to a number of important ones.

Such are carcinoma of the breast (its first manifestations and the complete and true end-results of operation); appendicitis (its true frequency, early diagnosis, and association with other abdominal conditions); glands of the neck (the average course of chronic enlargements, and the true relative merits of conservative and operative treatment); faulty posture (its relation to abdominal symptoms and displacements, and the age of onset). Such subjects are of immediate importance to the patient, as well as to the advancement of scientific knowledge, and they demand continuous observation of the patient over long periods by a practitioner, who must add to his special interest in the subject the opportunity of seeing large numbers of similar cases.

With regard to carcinoma of the breast, the surgeons have published large numbers of statistics, such as the 20,000 results of operation recently summarized by the Ministry of Health; but when one realizes what a small proportion of these were followed to the end of their lives, although every one will be somewhere recorded in the death certificate of a general practitioner, while many were under treatment for recurrences which were never reported to their surgeon, then one must



regret the loss of such a valuable mass of detailed information. Statistics collected under the present system inevitably give a picture that is out of focus, while this very uncertainty reacts on the general practitioner, making him hesitate to call in early a specialist, who is likely to recommend radical and expensive measures the efficacy of which is still in doubt.

Thus, with appendicitis, if the surgeon saw all cases of abdominal pain, would he operate on more than he does at present, or would he be astonished at the number which can safely be trusted to recover spontaneously? At present there is no standard of wholesale accurate observations, so that the practitioner has to rely on his personal judgment, unaided by sufficient data.

The great question of bodily mechanics and their relation to health, which has been taken up by Boston orthopædic surgeons, represents a domain hitherto left entirely to the family doctor, who, it is to be feared, has done little to till the soil, though his opportunities have been vast. He alone has hitherto had the chance of seeing the faulty posture take its rise in childhood, possibly in some skeletal abnormality, develop in adolescence through unbalanced growth, or appear in adult life as a sequel to some debilitating illness, and then gradually bring in a train of disordered functions.

*Difficulties which Prevent the Utilization of the Material in General Practice.*—Before weighing the difficulties which confront the practitioner, it is wise for a moment to consider the nature of clinical research. There are theorists who believe that in clinical research the thinking can be done at a central office, whence are issued thousands of printed schedules, ready to be filled up by scattered practitioners, who need have no special training in the subject. This method was tried on a large scale in the war, and proved a lamentable failure. Those who have investigated any subject

## RESEARCH IN GENERAL PRACTICE

by means of records, even in large medical schools where some form of schedule is in use, know that, although house-surgeons are to a certain extent picked men and are under the influence of the same chiefs, yet the value of their records varies enormously, so that an outsider can only ascertain from them a few crude facts. It is obvious, therefore, that each worker must have a special training in the branch which he is to investigate, and ought also to have a personal interest if the work is to have real value. The general lines of the investigation may well be directed from headquarters, but the individual must not be expected to work like a calculating machine for recording accurate results. In Germany, under laboratory conditions, the Teutonic temperament permitted a good deal of research to be done on factory lines; but the conditions of general practice in Britain are wholly diverse and no such method is applicable.

The main hindrances to research in general practice at present are . the ignorant attitude of the general public, which still approaches the doctor in the spirit of the African native before his medicine-man; the too-varied nature of the field, which seldom provides enough material of one type for reliable conclusions to be drawn, and, finally, the absolute lack of assured leisure which is essential for clear thinking and original work.

In spite of the advance of specialization in the industrial world, the general public expect the family doctor to be an encyclopædia, intimate with the latest advances in medical science, and yet remunerated as a second-rate and undependable worker. Not only is he expected to cover a field too vast for any man, but there is no day of the week, no hour of the day, on which he can be moderately certain of being undisturbed, so as to give a brief space to the study of medical literature, to think over with a quiet mind the cases

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he is attending, or to write out for publication the observations he has been able to make. There are geniuses who can produce original work under these adverse conditions, but it is obvious that the restlessness of mind produced by such uncertainty (or rather certainty of interruption) is very unfavourable to good mental work. The fact that the majority of late calls and consultations are caused by trivial complaints, which might easily have waited a more convenient hour, does not reduce the irritation. The profession is itself largely to blame in this matter, because certain members are apt to regard the financial aspect, and prefer a large fee at a late hour to more methodical work, and they, therefore, pander to the patient's selfish desire for attention the moment that he becomes interested in his own ailment, while other practitioners have indulged in a kind of false sentimentality. These make it difficult for the rest to teach the public that reasonable hours and methodical work make for efficiency, and hence are as much in the patient's interests as the doctor's.

*Possible Directions of Reform.*—It is obvious that the very reverse of the conditions noted above ought to prevail. The key to any reform in practice is to educate the public to demand it, and in these days of the universal power of the appeal of the Press it should not be difficult to create such a demand. A little enthusiasm and combination from the bulk of the profession and the thing will be done! To judge from the widespread discontent expressed by individual practitioners and also by patients whose correct diagnosis has been made too late, it should not be hard to find the enthusiasm for reform.

The public must be taught that medicine is not a fixed alphabet which is either known or not known, but a progressive science demanding life-long study. They must learn to regard the doctor as a scientific

worker, who will be philanthropic in an emergency, but is neither an untiring machine nor a religious fanatic seeking self-immolation.

It should be provided that every chronic case of more than a few weeks' duration would be automatically grouped under a practitioner specially experienced in such disabilities. The patient might occasionally get into the wrong group, but he would, at least, be the subject of special study, and hence more likely to get the right diagnosis. It is not necessary that acute and trivial cases should be specially grouped; any practitioner is capable of dealing with them, and the necessity for doing so and for observing the home conditions of a number of patients will keep him from becoming too narrow through specializing more particularly in one branch.

In the subject of orthopædics, which really provides a large part of the material in general practice, the evils of the present system have become so glaring, through the obvious gross deformities that may develop, that the system of grouping cases in special clinics is becoming widespread. These clinics are scattered throughout rural areas, as well as in cities, are connected with a central hospital, and are visited periodically by surgeons with special training in the subject. The minor clinics are under the care of general practitioners who had developed particular interest in this branch, either through experience in the war or as house-surgeons. These latter are not expected to represent the last word in their subject, and have the advantage of periodic visits from the hospital staff, but their standard of work is far above that of the average practitioner, who has had no such special opportunities, while the quantity of material at their disposal is in itself a source of education.

Such a system might well be applied to many other branches of medicine, such as gynæcology, cardiology,

lung diseases, metabolic and endocrine diseases, etc., for many of these subjects demand an expensive outfit of elaborate instruments of precision, and they need such prolonged and constant supervision by an expert as it is almost impossible for a consultant to give under present methods

The subject of tuberculosis and infant welfare are already being largely withdrawn from the scope of the general practitioner, but, unfortunately, a tribe of rather narrow specialists is being developed to deal with them, instead of general practitioners being induced to divide themselves into groups, each of which would devote its main energy and interest to some special branch, without losing touch with other subjects, and thus maintain a broad, balanced outlook. This subdivision of labour is a plan followed even now in certain towns by firms of doctors, and it is reported on alike by patients and practitioners as an admirable arrangement. With modern scientific advances, it is impossible to equip a single individual to deal adequately with all diseases, while the annihilation of distance by the motor-car and the train has rendered it unnecessary for the feat to be attempted.

The practitioner who is to take up a special subject, as suggested above, ought to have had post-graduate experience in it, preferably as a hospital resident, and he ought to keep continually up-to-date by periodic visits to special clinics. He would have at his back the consultant staff of some large institution, and would be the regular attendant, both at their homes and at the clinic, of large numbers of chronic cases of the particular group, which would give him a wide experience of all the phases, such as is unobtainable by specialists under present conditions. To such men would be given the numerous public-health appointments, which would then be made part-time ones, an arrangement that would prevent much of the over-

lapping that prevails at present, and also would keep the holders from becoming too narrow in their outlook. The more brilliant practitioners would also have the chance of promotion to a large hospital staff, whereas under present conditions general practice rarely fits a man for such—indeed, usually it proves an insuperable obstacle. The advantage of such promotions would be that the lecturers in the medical schools would then be training students in work which they themselves had done, and which most of their pupils were about to do, quite the reverse of the present system.

The doctor who never attained the position of hospital consultant would yet have material in his practice with which to make contributions to science, and a field which would repay careful work and interest, instead of the hopeless tangle of subjects and sudden jerks from one occupation to another which nowadays distract and dishearten the conscientious practitioner.

In all but the smallest centres there would be more than one exponent of each branch, so that the element of competition would not be eliminated, and the inefficient man would gradually get squeezed out. A possible criticism that, while conscientious doctors would transfer their cases to the expert, the unscrupulous might not reciprocate the exchange, can be met by pointing out that once the public are educated to demand specialization, they will not long permit any doctor to treat a chronic case outside his own branch; moreover, it is his interest to distribute them amongst doctors from whom he expects a corresponding exchange. In this imperfect world no system is secure from abuse, but it cannot be denied that the present one permits much exploitation by the mercenary practitioner, while it cannot be said to offer any special guarantee of efficiency. The alternative system here proposed would attract to the profession many fine intellects, who are now deterred by the prospect of a



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# The Earlier Phases of Vertebral Arthritis.

By HUBERT HIGGINS, M A , M.R.C.S., L.R.C.P.

*Late Assistant Surgeon to Addenbrooke's Hospital, Cambridge  
and Demonstrator of Anatomy to Cambridge University*

THE earliest indications of vertebral arthritis are probably the most commonplace of all disorders. The later stages dominate a considerable group of disorders and diseases which can be usefully classified as recognized and unrecognized. The faulty, inadequate science and haphazard, ignorant therapy of osteopaths and chiropractors are utilized for the latter group. The causation and definition of these conditions are as obvious as their treatment is successful provided the technique is directed by a thorough knowledge of living anatomy, both morbid and normal. To acquire contacts for diagnosis and successful therapy it is essential that the mind should be seized by the following data :—

- 1 Intravertebral compression, perithecal fibrositis
2. Lymphatic obstruction, lymph stasis and mechanical inanition
- 3 Tender spots, muscular spasm and muscular atrophy.
4. Causation
- 5 Treatment and prognosis.

The characteristics of the morbid anatomy of connective tissue in the living body are readily ascertained by touch and muscle sense, an increasing scale of tonicity showing degeneration and a decreasing scale, regeneration. An ascending scale of hypertonicity, from softness to toughness, can be conveniently classified into —

- (1) Watery softness, identified with Fischer's cellular

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life of aimless drudgery, which demands the methods of the shopkeeper without offering equal financial prospects. Any arrangement which placed the vast resources of general practice at the disposal of research workers, and offered scientific work to the bulk of the profession, would raise its whole standard, and would be of enormous benefit to mankind at large. It would compare with present conditions as the scientific working of a mine compares with the gathering of surface deposits by individual labourers, each of whom carts away his spoil in a barrow.

With the organized subdivision of labour outlined above, it should be easy to combine organization of other matters, such as provision of a central clinic in each district with clerical and domestic staff, so that the individual doctor would be saved the irksome labour of accounts, would reduce the heavy expenses entailed by provision of consultation facilities in his home, and could take emergency and night-calls in rotation.

It is the sincere belief of the writer that such a re-organization of the medical profession is not merely urgently needed, but is also immediately possible. All other arts and sciences have adopted the principle of the division of labour. Why should medicine lag behind? The sculptor is now seldom painter, architect, goldsmith, and engineer, as in mediæval times. Even our surgeons would now scorn the labour of the barber, and a large number of physicians have ceased to compound drugs, so why should we not advance a little farther on the same path? The rapid growth of medical science seems to make the advance imperative, and even more clamorous is the call from the great wilderness of our ignorance, which can only be cleared by cheerful co-operation and patient toil. The remedy lies in our own hands—if we but demand the change our patients will demand it too, and see that it is carried through.

curve backwards over the knee will, in suitable cases, immediately diminish or even temporarily abolish this abnormal, intravertebral resistance, in a marked degree, by opening and stretching the intravertebral foramina. This device will also relieve the pain from funiculitis. Pressure on the spinal nerves, causing either girdle pains or severe pain from localized funiculitis, can also be relieved, in suitable cases, by forcible pressure applied over the right and left lateral vertebral masses alternately, in two or three adjacent vertebræ.

The contrast between the intravertebral spaces and the laminae is not easily felt in the lumbar vertebræ, owing to the depth from the surface and the breadth of the spaces. Lateral elasticity, through the wide intravertebral spaces can also be felt in the cervical spine.

The only occasions where there have been purposive inspections of this abnormal tissue were when Professor Sicard asked M. Robineau to remove the perithecal fat, after laminectomy, in six cases of intractable, almost paralytic, lumbago. When the vertebral canal was opened and the perithecal fat exposed, it was found to be too tightly packed and to project out of the canal. When it was removed the cord and nerves were found to be compressed and displaced. Professor Sicard considers that the presence of albumen in the cerebrospinal fluid, in these cases, is caused by venous obstruction.

## 2 LYMPHATIC OBSTRUCTION, LYMPH STASIS AND MECHANICAL INANITION.

The chief consequences of the resistance offered to the expansion of the connective tissue cells by anatomical rigidities is lymphatic obstruction, causing lymph stasis, mechanical inanition and muscular atrophy within the catchment area of the obstructed lymphatics. The significance of these terms will be

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œdema; (2) A mucoid phase, varying from watery softness to decided firmness. The word mucoid is used because it exactly describes an unmistakable gliding sensation under the skin, closely resembling that of mucus under the skin. It is, in all probability, due to an intracellular glucoside, (3) Premucoid, firm tissue where the mucoid sensation is distinguished with difficulty, (4) Firm tissue where there is no mucoid sensation; (5) Tough tissue giving the sensation of tough indiarubber, (6) A resistance best described as calcareous with an almost bony toughness. The last two categories, and, under exceptional circumstances, No 2, give a "calcium shadow" in radiograms. The descending scale of regeneration invariably, therefore predictably, reverses the degenerative phases.

### 1. INTRAVERTEBRAL COMPRESSION: PERITHECAL FIBROSITIS.

The morbid anatomy of this condition is obscure in the dead and obvious in the living body. There is an intrinsic cellular expansion, an active hypertonicity of the connective tissue inside the vertebral canal which, being resisted by its rigidities, exercises pressure on its contents and also on the nerves issuing from the intervertebral foramina. This hypertonicity can be apprehended either by the contacts of touch or muscle sense or by inspection. The first method requires skill and experience, the latter is only possible through vivisection.

Normal relaxed muscle permits a definition of the sides of the spinous processes and the laminae. This tactile definition is obscured in cases of expansive perithecal fibrositis by varying degrees of elastic resistance. The dorsal interlaminar ligaments bulge, causing definite ridges of elastic resistance, which may be exceedingly difficult to overcome. Forcible separation of the dorsal vertebræ, by bending the dorsal

## VERTEBRAL ARTHRITIS

curve backwards over the knee will, in suitable cases, immediately diminish or even temporarily abolish this abnormal, intravertebral resistance, in a marked degree, by opening and stretching the intravertebral foramina. This device will also relieve the pain from funiculitis. Pressure on the spinal nerves, causing either girdle pains or severe pain from localized funiculitis, can also be relieved, in suitable cases, by forcible pressure applied over the right and left lateral vertebral masses alternately, in two or three adjacent vertebræ.

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best defined by the following cases .—

*Case 1* —A lady, aged 50, complained of enormous, useless, tender, painful hands, causing sleeplessness. Persistent local and general treatment had been pursued for over five months for rheumatism. This included sanatorium treatment, with radiant heat, medicated baths, massage, violet rays, drugs, and so on.

The swelling commenced abruptly at the proximal extremities of the carpal spaces, which were both rounded on their carpal aspects. The palmar fascia was taut, the underlying tissues obscurely elastic and singularly tough. The skin of the enormously enlarged fingers pitted on pressure. This was the only indication of cedematous infiltration, the result of venous obstruction in the palm. A diagnosis of lymphatic obstruction was made. Massage by alternate pressure and relaxation, beginning at the proximal end of the carpal passages, for two hours daily, relieved the more urgent symptoms in twenty-four hours and, after ten days, the lymphatic circulation was sufficiently restored to enable her to resume housework.

*Case 2* —A lady, aged 28. Seen in Paris with Dr. Leri. There had been increasing swelling of the right knee-joint, with pain and discomfort. There had been neither local nor general increase of temperature. She had been in bed for more than a week. Dr. Leri gave a cautious prognosis, he thought that it was possible for the swelling to be tuberculous. There was a history of an illness lasting several years, complicated by pleurisy. There was a considerable uniform, soft, elastic swelling confined to the limits of the synovial membrane, with no indication of fluid. Firm, tender resistance was noted at the attachments of the articular ligaments, above and below. Her general tonicity was low, with cellular cedema of both breasts. A diagnosis of lymphatic obstruction was made by the writer because of the peculiar localized tenderness and resistance over the femoral and tibial attachments of the ligaments. Alternate pressure and relaxation commencing from above downwards and from below upwards, for twenty minutes, caused rapid relief from discomfort. The swelling had diminished so much during the night that the patient wanted to get up the following morning. There has been no recurrence for five years.

These two cases illustrate three points: first, that there was lymphatic obstruction, secondly, that it was due to cellular hypertonicity; and, thirdly, that the removal of the obstruction resulted in apparently complete biological reversion. Sequent observations, through touch and muscle sense, of variations in cellular hypertonicity, provide an interesting clinical method for ascertaining variations in the chemical and physical reactions of the lymph and cell contents. Treatment

is only practicable and successful at the periphery, not elsewhere, because even after prolonged work the condition is invariably recurrent

Women are conspicuous victims of lymphatic stasis complexes. The normal feminine figure, both at work and at play, can be seen, for instance, at Arcachon, where the women wear red trousers. In the distance, they have the figures and the gestures, the movements and the restlessness characteristic of healthy boys. The civilized feminine sacrum is typically covered with toughish, tender connective tissue, the sequel of a sluggish lymph stream. Their pyramidal muscles, unused and atrophied, permit the gradual invasion of this hypertonic connective tissue into the sacrosclatic foramina, from the sacrum. The foramina gradually become occluded by the tissue, which finally, more or less, obstructs the sciatic lymph trunks. In extreme cases the gluteal regions, the hinder aspects of the thighs and legs, become enormous.

A considerable number of these cases have been regenerated, that is, biologically reversed, by Asiatic massage combined with systematic restoration and maintenance of muscular function. In severe cases the treatment can only succeed when the lymphatic lines of communication between the original site of obstruction and the periphery are kept free by suitable muscular exercises. The vertebral column, owing to its anatomical structure, facilitates the occurrence of these complexes of lymph stasis, but undoubtedly their anatomical analysis is difficult. Unless the mind be seized, by repeated craft experience, with the more obvious changes in the rest of the body, the complex may easily be, anatomically speaking, incomprehensible.

### 3 TENDER SPOTS, MUSCULAR SPASM, AND ATROPHY

When either the ankle joints or the knee joints are passively flexed and extended in cases of generalized



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## VERTEBRAL ARTHRITIS

of focal sepsis. These cases are, it is well known, treated with astonishing success on the Continent by metabolic science and practice. The writer has had considerable experience in the collating of anatomical changes and chemical analyses over long periods of time. In a severe case of general inanition, associated with spinal arthritis, prolonged persistent metabolic treatment finally enabled the patient, a musician, to teach massage during the war. This exhausting occupation was followed by difficult administrative work in Poland. Examination of the cervical spine, fifteen years after commencing treatment, showed that her vertebral arthritis was unchanged. In systematic analysis of these cases the Willcox abstraction is indispensable. This remarkable abstraction identifies these coarse anatomical changes with the operation of a chemical substance which, by its inclusion in the lymph, can affect chemical toxic reactions with the cells in the same way as lead or arsenic. The simple, illuminating, and practical abstraction of cells and lymph is invaluable in both diagnosis and therapy. The following cases are good examples of the value of this approach :

*Case 3* —A patient with panniculus dolorosa, who had been under treatment for nearly eighteen months, had had her neck massaged by the writer three days previously. The patient, an accurate, intelligent, objective observer, was positive that her neck had been free from either stiffness, toughness, or discomfort when she went to bed. She had had severe cervical fibrositis and migraine for over sixteen years. She awoke in the morning with an attack of migraine, that is, with nausea, giddiness, and stiffness of the neck and throbbing headache. Three hours later the upper two-thirds of the hinder aspect of the neck was found to be occupied by a tough mass of connective tissue. The headache, nausea, giddiness, and pallor were relieved by an hour's massage without any difficulty. Exceedingly firm pressure was needed to soften the tissues, especially deep down between the atlas and the occipital bone. As soon as this was softened the nausea, produced, in the writer's opinion, by pressure on the vagi, was immediately relieved. This was the last experience of migraine after twenty years' persistent attacks.

*Case 4* —A lady, aged 35. A long history of autointoxication, her tonsils and appendix had been removed. Her predominating symptoms were vertebral, girdle pains in the sixth and seventh

auto-intoxication, the movements may be resisted by cautious reflex contractions. When this reflex is present, pressure round the joint by the finger progressing round the attachments of the articular ligaments, invariably discovers exceedingly tender spots of which the patient is unaware. This unawareness arises from the complete reflex defence of the appropriate joint muscles. It is very interesting to note that, in some cases, where these tender spots can be removed by massage, the reflex resistance disappears. But a heavy price is paid, in terms of general muscular efficiency, for this unawareness. There are always progressively degenerative modifications of the muscles. Successful practice demands integral abstractions, to think of a joint apart from its muscles is to ask for trouble, that is, for unsuccessful practice. Systematic anatomical analysis always pays, because without integral adjustment, complete recovery is impossible. The writer recently saw a case which had been diagnosed as spinal tumour in Paris:

A fracture of the fibula had been followed by rapid atrophy of the other extremity during that period when extra work is thrown on the sound leg. The correction of an old gouty arthritis of the great toe, the absorption of gritty chalk soaps by phosphoric acid, combined with the systematic restoration of the long-standing degenerative, atrophic physical changes in the muscles, demonstrated, by biological reversion, the peripheral origins of the trouble. The work of the limb had been carried on for many years with a diminishing margin of efficiency. When extra work was thrown on it atrophy resulted, which was easily analysed, by touch and muscle sense, together with an investigation of function.

To recapitulate, the points for diagnosis in vertebral arthritis should therefore include evidence of intra-vertebral compression, lymphatic obstruction, muscular spasm and atrophy, with carefully localized tender spots.

## 4 CAUSATION.

Complete biological reversion, is, as far as the writer's experience extends, impossible without the removal

# VERTEBRAL ARTHRITIS

## 5. TREATMENT AND PROGNOSIS.

The purpose of treatment is the substitution of normal for faulty nutrition. In terms of a single cell this implies a normal interchange between the cell and the lymph, in general terms an adequate ration, normal muscular structure and function and free intestinal traffic. An estimate of the normal and abnormal tissues and atrophied muscles is required as well as the general tonicity. General tonicity is best ascertained by grasping the arms immediately above the elbow joints, on either side of the biceps tendon. The rapidity with which a free interchange between the cells and the lymph is made in this situation gives useful information. It is evident that the logical implication of the Willcox hypothesis involves a concept of quantity. For example, the treatment of a case of vertebral arthritis is determined by the contrast between the vertebral hypertonicity and that of the rest of the body, as well as the integrity of the general muscular system which dominates general nutrition. Each restoration of muscular function, the successful adjustment of the ration and the intestinal traffic, marks an indispensable stage on the road to recovery. The restoration of full muscular function is most important because general slackness is frequently an expression of undue and disproportionate fatigue of one or more inadequate or atrophied muscles. The pace of a battle fleet is set by the speed of the slowest vessel. This principle also applies to the living body.

Satisfactory metabolic treatment and intestinal stasis are incompatible. Nothing but the passage of a heaping teaspoonful of powdered charcoal in thirty-six hours is satisfactory. In old cases of autointoxication thickened hypertonic connective tissue in the walls of the colon may take as long as three months' treatment

dorsal segments as well as stiffness, tenderness, and constant pains in the dorsal region. She had, in addition, the usual symptoms of severe neurasthenic toxæmia. Prolonged experience with the medical profession having been unfortunate, she had found relief from an osteopath who, by forcibly separating her dorsal vertebræ, gave her temporary relief from painful funiculitis. Apical abscesses were found in radiograms. Sir William Willcox advised the removal of the teeth. A severe reaction followed. After ten days in bed she was sitting in the adjoining room talking and feeling much better. She suddenly complained of faintness, giddiness, and nausea. She needed the assistance of two persons to return to bed. She then complained of increasing tenderness in the cervical spine. The increasing pain and stiffness were relieved by the contact of a hot-water bottle. The neck was examined the following morning. Toughish, mucoid thickening was found in the cervical spine and the upper three dorsal vertebræ. The neck had been examined and found free the previous morning.

*Case 5*—A lady, aged 45, with a low, generalized hypertonicity complained of sudden, severe, neuralgic throbbing pain and tenderness behind and below the right mastoid process. A watery cellular œdema obscured a firm resistance, in contact with the bone, under the attachment of the sternomastoid. This was easily softened and the circulation restored in half an hour. The tender resistance and the pain disappeared simultaneously. There was no recurrence.

*Case 6*—A lady, aged 26. This was a serious case of general inanition complicated by extreme paralytic degeneration of both lower extremities, following lymph obstruction of both sciatic trunks. After an apparent recovery she had passed the winter in Mexico, mainly for riding exercise. There was a decided improvement in her general health, in appetite and in exercise. She stayed in New York the night before the liner sailed. She remembered that she had felt unusually hot. Two nights later she complained of a sensation of stiffness in the region of the sacrum. During a wakeful night she complained of increasing stiffness which she described "as climbing upwards from the sacrum." She was so stiff in the morning that she was obliged "to pull herself up by the cabin furniture." This patient had had a prolonged experience, during a stay of several months in Duff House, of chronic perithecal fibrositis, which had been subsequently restored by the writer to normal lymph circulation and full muscular function. Assiduous practice of tennis and golf with expert coaching had made her vertebral column exceedingly supple. On her return to London there was decided hypertonicity of the external tissues with marked intravertebral tension and spasmodic muscles. Three months' treatment was necessary before her spinal circulation was satisfactory. This was followed by disquieting hepatic symptoms which, after consultation with Dr Marcel Labbé, of Paris, were successfully treated at Vichy. The cause of this relapse was subsequently traced by Sir St Clair Thomson to infection from hæmolytic bacilli in the stump of her left tonsil.

# The Diagnosis and Treatment of Bronchiectasis.

BY L. S. T. BURDELL, M.D., F.R.C.P.

Physician Emeritus for Consumption and Diseases of the Chest,  
Erasmus, London; Physician to the London Hospital

THE diagnosis of bronchiectasis is not as a rule a matter of any great difficulty. The history of cough occurring in severe paroxysms during which quantities of sputum are brought up, the chronic nature of the complaint, the physical signs and characteristic clubbing of the fingers, form a very definite picture. The severity of the disease, however, varies greatly, and in some cases bronchiectatic cavities are dry and the patient keeps in good health with very little cough and no sputum: in others the patient has large cavities full of most offensive pus and is extremely toxic and ill. The disease is not infrequently mistaken for pulmonary tuberculosis, and patients have been treated—sometimes for years—in a sanatorium or in Switzerland at considerable and unnecessary expense and inconvenience. This error in diagnosis is usually due to certain preconceived ideas, and the following points are not fully appreciated.

*Hæmoptysis.*—This symptom is sometimes thought to be almost pathognomonic of pulmonary tuberculosis. I have heard it said that a patient with hæmoptysis should be considered *ipso facto* to be tuberculous except in a case of mitral stenosis. In the absence of signs of any disease I quite agree that the occurrence of a definite hæmoptysis is very strongly suggestive of tuberculosis, and it is certainly most dangerous to suggest that the blood did not come from the lungs but came from the throat or elsewhere. Many

## THE PRACTITIONER

of an hour a day before normal peristalsis is restored. Even extreme cases of hypotonic muscular atony may be restored with patience. Is intestinal sepsis promoted or prevented by the restoration of normal nutrition and normal peristalsis? If it be prevented by the restoration of normal lymphatic circulation how is it that vaccines attain this end? If sepsis be promoted by restoration the whole theory of immunity falls to the ground. The following case will serve to illustrate the application of the above principles to analytical diagnosis and therapy

*Case 7* —A man, aged 44, engaged in difficult, responsible international work. He complained of physical and mental fatigue, troubled sleep, and tenderness and stiffness of the cervical spine. A diagnosis of severe neurasthenia, with the prescription of six weeks' treatment in a nursing home, followed by six months' rest, had been made by competent medical authority. He felt that it was his duty to continue his work. Therefore there was an omnipresent conflict in his mind between the inexorable fate predicted by authority and this resolution. This fear, similar to that utilized by the Greek dramatists, produced so intense a preoccupation with his symptoms that he found himself unable to concentrate a peculiarly businesslike mind on his work. He consulted osteopaths, who reassured him by attributing his condition to the spine. Their well-requited services gave a little relief. On examination the cervical spine revealed somewhat irregular patches of tender resistance, as well as decided elasticity on deep pressure on either side of the spinous processes from the third dorsal to the second cervical. The resistance was easily overcome by twenty minutes' Asiatic massage. The general level of tonicity was low. The charcoal test revealed intestinal stasis. The black coloration was twenty-four hours late, and lasted thirty-six hours too long. An injection of four ounces of olive oil with a one-ounce glycerine syringe was prescribed every night with Bulgarian bacilli (Mulford), as well as a sufficient dose of Glauber's salts to produce a complete clearance of the bowel. The charcoal test was used to control the intestinal traffic twice a week. There was a rapid recovery. In ten days the patient wished to go to Armenia. Sir William Willcox, after a negative X-ray examination of the teeth, allowed him to go. He returned improved in health. The control, by massage, of the hypertonic perithecal connective tissue was entrusted to the patient after two lessons. As soon as he was convinced that the cervical resistance accounted for his symptoms, and that it was under his own control, his preoccupation with his ailments disappeared overnight. A definite, palpable condition, under autonomous control, had been substituted for a vague terror-laden diagnosis and prognosis.

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## DIAGNOSIS OF BRONCHIECTASIS

*Clubbing of Fingers*—The characteristic drumstick clubbing of the fingers and toes is not seen in tuberculosis, where, if there is any clubbing at all, it is not so great, the nails being slightly curved and the ends of the fingers little, if any, larger than normal.

*Lipiodol* is of the greatest value in diagnosing a difficult case, for after some has been injected into the trachea the bronchiectatic cavities can be well seen by X-rays

To inject the lipiodol, the patient should sit up in bed supported by pillows and slightly turned towards the diseased side, so that the lipiodol will flow into the right or left bronchus as required. 0.5 c cm of a 5 per cent solution of cocaine is then injected into the trachea through the cricothyroid membrane. This makes the patient cough, and care must be taken that the needle is not broken in the trachea. A 20 c cm. syringe is then filled with lipiodol, which has first been warmed, and the contents injected through the cricothyroid membrane. This usually causes no inconvenience to the patient at all. As the lipiodol is a thick oil and difficult to force through the needle it will be found much simpler to use a syringe working on a screw principle, such as is supplied by Messrs Allen and Hanburys. In certain cases as, for example, the *forme sèche hémoptoïque*, bronchiectasis can be diagnosed only by the injection of lipiodol, and it certainly should be used in all cases of repeated hæmoptysis of unknown origin. Moreover, lipiodol shows the exact extent of the disease and whether or not it is unilateral. A serious operation, such as thoracoplasty, should not be undertaken unless it is quite clear that on the other side of the chest the lung is not seriously affected.<sup>4</sup>

X-ray, with or without lipiodol, is also of value in helping to distinguish bronchiectasis from other conditions, such as empyema which has broken into a

a patient has had his chances of recovery spoilt by the failure to recognize the significance of an initial hæmoptysis. If, however, there are definite physical signs at the base of the lung, an attack of hæmoptysis is no evidence for or against the disease being tuberculosis. Yet a case originally and correctly diagnosed as bronchiectasis is sometimes condemned as tuberculous on the occurrence of a hæmorrhage. It is thought that tuberculosis must at any rate have supervened or there would have been no hæmoptysis. Dr. Acland<sup>1</sup> quotes 25 cases of bronchiectasis confirmed by autopsy. Of these 7, or 28 per cent., had hæmoptysis of a pint or more; 5, or 20 per cent., had from 2 to 6 ounces, 8 had blood-stained sputum, and only in 5 was there no hæmoptysis at all. Osler said that hæmoptysis occurred in 17 of his 24 cases, and in 3 it was extreme. Some French physicians<sup>2</sup> describe a form of bronchiectasis, which they call *forme sèche hémoptorique*, in which the patient has attacks of hæmoptysis at intervals but is well and free from sputum between the attacks.

*Tubercle Bacilli.*—Another fallacy is that the absence of tubercle bacilli from the sputum, is of no importance. In any case where there is sputum, failure to find tubercle bacilli after careful examination on three separate occasions is very strong evidence indeed against any active tuberculosis. Sir James Kingston Fowler<sup>3</sup> says that out of 186 positive cases in his series tubercle bacilli were found on the first examination in 167. Failure to find the bacilli does not, of course, exclude tuberculosis, but it is quite wrong to suppose that a negative sputum is of no diagnostic value.

*Site.*—Tuberculosis, and especially tuberculous excavation, is very rare at the base of a lung, whereas the common situations of bronchiectatic lesions are at the lower and middle parts of the lung.

## DIAGNOSIS OF BRONCHIECTASIS

an occasional emetic is the best method of bringing up the sputum. Garlic was at one time frequently given, and good results were claimed from its use. No doubt it has deodorant powers, but its own smell is so unpleasant that the patient is apt to feel that, as far as his breath is concerned, little more has been done than to substitute one smell for another.

Creosote is undoubtedly of value in this disease. It may be given in capsules, and if at first small doses are given (m 3 to 5) they can be gradually increased until very large doses are being taken without ill-effect. Creosote vapour may be inhaled in cases where there is much foetor, and the creosote chamber is the best method of employing this treatment. The patients are seated in a small room, and commercial creosote is heated in a metal bowl over a gas flame so that the fumes fill the room. The patients' eyes should be protected as the fumes are irritating. The patients can rarely stay in the room for more than a few minutes at first, but after a time they become accustomed to the vapour, and are able to stay in the chamber for an hour without any discomfort. The fumes have a deodorizing effect, but, in addition to this, they excite cough and help to empty the tubes.

Intratracheal medication has been employed, and various drugs have been injected with a laryngeal syringe. A common mixture was menthol 10 parts, guaiacol 2 parts, and olive oil 88 parts, or iodoform in olive oil was used. This method of treatment has not given good results, and I think it may actually do harm. Experiments on animals<sup>5</sup> suggest that such injections may set up a proliferative bronchopneumonia, and may even lead to abscess or gangrene of lung.

*Postural Treatment*—This is very important, and often in conjunction with a little creosote and tonic treatment is sufficient to cure the complaint. In

bronchus, putrid bronchitis, gangrene or neoplasm

## TREATMENT

The great principle in the treatment of disease is to remove the cause. Bronchiectasis is not infrequently caused by the presence of a foreign body, such as a button, pipe-stem, peanut, or a piece of tonsil after operation. Quite a large substance can get into a bronchus without the patient knowing anything about it. Therefore before embarking on treatment one should make quite certain by means of X-rays, and, if necessary, bronchoscopy, that the disease is not due to a foreign body, by the removal of which the condition will be cured. Again, bronchiectasis may result (though very rarely) from syphilitic ulceration or gummata. In these cases anti-syphilitic treatment may lead to a very great improvement, if not an actual cure. Pressure from aneurism or neoplasm may be the cause, and so should be looked for. Nasal sinusitis is often present in bronchiectasis, and improvement sometimes follows treatment of the nasal sinuses. This should be done before submitting the patient to any more serious operation.

If there is no cause which can be dealt with directly, treatment must depend upon the condition and age of the patient, and the severity of the disease, but the more simple methods should always be tried first, as they are often sufficient to effect a cure even in bad cases.

*Medicinal Treatment*—The objects of medicinal treatment are to empty and flush out the dilated tubes by means of expectorants and to relieve the bronchial fœtor. One must remember, however, that the disease cannot be cured by drugs alone, and it is most important to assist in the emptying of the tubes by means of posture. Of expectorants, potassium iodide has been much used, but in the case of children

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adults, when the disease is fully established, it is not likely to succeed, but it may give great relief and enable the patient to live in comfort. In children, and especially if the disease is of recent origin, the results are very good. It will be found that by lying in a certain position or bending down, or, in the case of a child, holding it upside down, it is possible to empty the tubes. Or the patient may be put on a slanting bed or inclined plane. If the tubes are emptied twice a day by these means it will often be found that the sputum becomes less and less in quantity, whilst the general condition of the patient steadily improves. In some cases, however, all these measures are of no avail, and one finds oneself with a toxic patient, coughing up a quantity of offensive sputum, either with continuous pyrexia or liable to bouts of fever and often hæmoptysis.

*Artificial Pneumothorax*—In such a case, provided the lesion is unilateral or largely unilateral, an attempt should be made to induce an artificial pneumothorax. It is not often possible, however, to induce an efficient pneumothorax owing to the amount of adherent pleura. But it should always be tried, for not only is it quite safe, but even if only partially successful it frequently effects a great temporary improvement in the patient and puts him in a better position to stand any surgical treatment that may be advised. I have tried to induce an artificial pneumothorax in 19 cases of bronchiectasis, and in 5 of these I failed altogether, owing to adherent pleura. Of these 5, 2 are dead, 1 very ill, 1 in much the same condition, and 1, after thoracoplasty, very much better—indeed, he may be called cured. Of the other 14, the collapse was good in 2 only; of these, 1 is now well, and the other free from symptoms as long as the treatment is kept up, but the sputum returns as soon as the lung begins to re-expand. In 2 cases some degree of collapse was

## DIAGNOSIS OF BRONCHIECTASIS

obtained, but owing to adherent pleura not enough to affect the symptoms, so the treatment was discontinued. There were areas of adherent pleura in the other 10 cases, but a sufficient degree of collapse was obtained to improve the symptoms at first. In all these cases by a gradual spread of the adherent surfaces the pneumothorax cavities became obliterated. In spite of this 1 remains free from symptoms, and 4 are much improved, no longer toxic, and able to work. The phrenic nerve was cut in 3 of these 4 cases, so that the improvement may have been due to this cause, and not to the pneumothorax. In the other 5 cases thoracoplasty was performed, and 3 are dead. The other 2 are slightly less toxic, but are still bringing up quantities of sputum.

*Phrenicotomy*—In some cases I have seen improvement from this operation, and as it is safe and simple it is worthy of trial. The cases most suitable are those in which artificial pneumothorax is partially successful, but adhesions to the diaphragm prevent a full collapse of the dilated tubes. Dr Rist<sup>6</sup> reports the case of a young man who had bronchiectasis following pneumonia. Pneumothorax failed owing to adherence of the visceral pleura to the diaphragm. Phrenicotomy resulted in disappearance of the symptoms, including the clubbing of the fingers, and when the patient was seen four years later he was still free from symptoms.

*Bronchoscopic Treatment*—I have mentioned that the bronchoscope may be used to detect and remove a foreign body. It may also be used to aspirate and wash out bronchiectatic cavities. Some of the bronchi are often congested, so that the pus is bottled up in the cavities, these bronchi may be dilated by the bronchoscope and the contents of the cavities aspirated. After aspirating they may be washed out with 10 per cent. argyrol solution or boric acid, and afterwards painted with absolute alcohol.<sup>7</sup> It is necessary to repeat these



aspirations several times, but good results have been reported. Although the bronchoscope causes considerable discomfort, if not actual pain, to the patient, in the skilled hands of those who are constantly using the instrument this discomfort is reduced to a minimum.

*Major Surgical Treatment.*—If these methods fail there remains treatment by some major surgical operation, the nature of which must depend on the position and severity of the disease and the condition of the patient. I do not propose to do more than mention and make a few comments on some of these surgical procedures. A full account of them will be found in the works of Morrision Davies<sup>8</sup> and Lilienthal,<sup>9</sup> and to these authors the reader is referred. The physician should be aware of the possibilities of surgery and know the chances of recovery or improvement offered by the different operations as well as their risks. He should remember that it is important for the patient's general condition to be as good as possible before operation, and that a preliminary course of treatment either by posture and creosote or by artificial pneumothorax may effect a great improvement in the general health of the patient and make all the difference to the success of the operation. One should also bear in mind that when once a major operation has been performed it cannot be undone, whereas with pneumothorax it is always possible to allow the lung to re-expand if desired, and at least no harm is done. Before operation, therefore, it is important to make sure of the condition of the other lung by X-ray examination after the injection of lipiodol. When it has been decided to advise surgical treatment the choice of operation must be carefully considered in consultation with the surgeon. What appears to be a comparatively safe and simple operation may prove unsuccessful and lead to further surgical treatment, which in the end exposes the

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patient to more danger than if bolder methods had been adopted at the onset. Moreover, although some of these operations have a very high mortality, one should weigh against this the chances of life and the value of life to the patient under the diseased conditions. The matter should be clearly explained to the patient and he should be allowed to decide for himself with full knowledge of the risks he is running.

1 *Thoracoplasty* —If the lesion is small and at the base of the lung, removal of portions of 3 or 4 ribs over the diseased area may be sufficient to cure the symptoms. I have seen one very successful case. Usually, however, it is necessary to perform a complete thoracoplasty and put the whole lung at rest. I have seen two very good results of this method. One, a woman, has since married and is free from symptoms eight years after the operation. On the whole, however, I have been disappointed with the results, the diseased parts do not seem to collapse sufficiently, and there is so often some disease on the other side. However, the dangers of the operation are not great in skilled hands. Sometimes a preliminary phrenicotomy is performed with advantage.

2 *Drainage*.—This is best done by making an opening into a large bronchus and so creating a fistula. It is not a very serious undertaking, and gives great relief to the patient. In some bad cases of bilateral disease drainage on the worse side may give great relief to the symptoms, and is not infrequently followed by improvement of the disease on the other side.

3. *Pneumolysis* —The lung and pleura are stripped from the chest wall over the diseased area and wax or fat is inserted to keep the lung compressed. After a time the wax tends to ooze out and be expelled, but the patient usually derives great benefit from the treatment. The lung may be compressed by packing

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with gauze, which is left in place for one or two weeks and then gradually withdrawn

4. *Ligature of a Branch of the Pulmonary Artery*—Lilenthal thinks this may be of value in massive one-sided pulmonary suppuration. He describes one case, but the patient was drowned in pus shortly after the operation. I have seen one case in which the operation was done for hæmoptysis. The patient was alive and fairly well several years after the operation but was still liable to attacks of hæmoptysis.

5. *Cauterization*.—Graham has described a method of destroying a lobe of a lung by means of the cautery.<sup>10</sup> The operation is done in several stages, and the diseased part of the lung gradually sloughs away. It is said that hæmorrhage, if it occurs, can easily be controlled. A bronchial fistula forms, but this relieves the patient by allowing the cavities to drain, after a time it becomes obliterated.

6. *Lobectomy*—This is a serious operation, and the mortality, even in the best hands, is in the region of 50 per cent. Cases of very bad disease have, however, been cured by this method, so that if the condition of the patient is desperate the dangers of the operation, great as they are, may be less than the danger of leaving him alone or of any other method of treatment.

### SUMMARY OF TREATMENT

1. Look for the cause of the disease before starting treatment, and, if possible, treat the cause.

2. Simple treatment, consisting of draining the cavities by posture and the administration of creosote by the mouth or inhalation, is often sufficient to cure even bad cases, especially children and early cases.

3. Artificial pneumothorax is a safe method of treatment, but succeeds only if the disease is unilateral.

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and there are few, if any, adhesions. If only partially successful it is quite safe to have the phrenic nerve cut, and this may give a good result

4. Aspiration and lavage of the diseased part through the bronchoscope have proved successful in skilled hands

5 Failing success by one of the above methods, there remains treatment by some more serious surgical procedure Some of these operations are comparatively safe and some very dangerous, but the physician should bear in mind their possibilities, and at least give the patient the chance of making up his mind after the position has been carefully explained to him.

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# Some Practical Points in Pulmonary Tuberculosis.

By A E ROUSE, M R C S , L R C P

*Physician, Lancing Consumption Sanatorium, Honorary Medical Officer, Royal Surrey County Hospital Convalescent Home, Visiting Medical Officer, Southern Homes of Rest, Lancing*

THE early diagnosis of pulmonary tuberculosis is of the utmost importance, and the condition is often overlooked, or masked by other symptoms that are complained of by the patient. There may be but little cough, so slight, in fact, that the patient does not volunteer any information about it. When a young adult, or child in early life, seems listless or complains of feeling easily tired, or is inclined to be anæmic in appearance, the lungs should always be carefully examined—all lobes, and not only the apices. The lungs in all cases of anæmia in young girls should be carefully examined. Early tubercle is frequently the cause of the anæmia and general lassitude that are complained of. The examination of the chest should be carefully and systematically carried out, comparing the appearance of the two sides, and the development of the chest wall, noticing any hollow places under the clavicle, and the expansion of the chest on taking a deep breath, seeing if each side expands equally. The presence of moist sounds above or below the clavicle are sometimes overlooked.

Not uncommonly a slight hæmoptysis is the first visible sign that sends the patient to consult a medical man. Often in these cases no physical signs can be detected even after the most careful examination of the lungs, and the examination of the sputum is often negative. But all these cases should be looked upon

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and treated as early phthisis, and the patient not buoyed up with false hopes that nothing is wrong, or told to carry on with the usual work. When seen in this early stage with but little impairment of the lung tissue, appropriate treatment and careful attention to food, rest, and open air life, the prognosis is favourable.

Measles especially is a frequent predisposing factor, in practically all cases, even a mild attack, bronchitis is present, and in many cases a doctor is not called in; consequently the bronchitis is not treated, and proper care is not accorded the little patient, who is allowed to run about and take fresh cold, with a grave risk of subsequently developing broncho-pneumonia. If there should be a family history, or predisposition to consumption, the groundwork is prepared ready for future trouble. Measles should be a notifiable disease. The mortality from it due to lung complications runs into some thousands a year, and a large number of these fatal cases would be avoided if due care was taken to keep the patient warm, not only during the period of the rash but also during convalescence. Too many parents look upon it as a trivial ailment.

A large number of trades are especially prone to cause pulmonary tuberculosis amongst the workers in them, due to the inhalation of dust and irritating particles of metal or feathers, etc., setting up an inflammatory condition of the lungs. Knife-grinders' phthisis is a recognized disease. Jute workers and makers of linoleum are very prone to it. Bakers are particularly liable to contract asthma as well as phthisis. I consider that the wearing of a proper respirator, by all the workers in these trades, where the inhalation of dust is of everyday occurrence, should be compulsory, and would greatly tend to lessen the number of victims of this disease.

# A Case of Total Laryngectomy, with Successful Use of Tapia's Artificial Larynx.

By H ALEXANDER COWAN, M R C S , L R C P

*Late Registrar, Royal Ear Hospital (Ear, Nose, and Throat Department, University College Hospital)*

THE following case, in which total laryngectomy was successfully performed, presents a number of points of interest. First, that though the stitches burst and the trachea dropped so far back in the wound that the pharynx and trachea were in direct communication, nevertheless, severe chest infection was avoided by the use of Norman Lake's suction apparatus, which was used at short intervals to cleanse the wound, and by administering creosote through the nasal feed-tube. This drug, incidentally, has also been found very useful in a series of cases of laryngo-fissure.

Secondly, although a large sinus was formed into the pharynx, and feeding by the mouth was impossible for a long time, yet the sinus closed without further treatment, and the patient was left without any oesophageal stricture.

Thirdly, one may note the success with which the patient has used Tapia's artificial larynx by inserting the free end in his mouth, he speaks remarkably well, and can be heard at a considerable distance, he is also able to speak over the telephone.

Lastly, although this operation is severe, and liable to produce suicidal tendencies through fear of suffocation (this patient actually did try to cut his throat

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twenty-four hours after the operation), nevertheless, after recovery the patient was very cheerful

On June 25, 1925, the patient, a prematurely old-looking, thin man, aged 48, came to the out-patient department of University College Hospital complaining of hoarseness for three months, and pain in the throat. He stated that he had previously lost his voice for three or four weeks in November 1924. On examination of his mouth he was found to have filthy carious teeth. On laryngoscopic examination, the left cord was seen to be the site of a new growth, ulcerating on the surface, extending forwards for the whole length of the cord, and posteriorly into the arytenoid region. The cord was fixed on respiration. The patient was admitted to hospital, and on June 29 his mouth was completely cleared of teeth, under general anaesthesia.

On July 14 total laryngectomy was performed, as the growth was considered too extensive to get any reasonable chance of success with laryngo-fissure, or partial removal of the larynx. An incision was made down the mid-line of the neck, with a horizontal incision across the upper end of the wound. The trachea was divided, and the larynx turned up from below and separated from the pharynx in the ordinary way, the opening being closed by two layers of sutures. The wound was kept dry and free of blood during the whole operation by means of Lake's suction pump. The upper end of the trachea was sutured to the skin with four silkworm gut sutures. The patient returned to bed in good condition.

Thirty-six hours after the operation the patient was seized with an attack of asphyxia, due to his tracheotomy tube becoming plugged with mucus. In a violent spasm the tracheotomy tube was dragged out, also the nasal feed tube. The stitches holding the trachea were burst, and the trachea dropped back in the wound. The secretion from the wound infected his trachea, and he developed a lung infection, and ran a high temperature at night, 101°. He was given a mixture of creosote, m. v. pulv. gum. acacia, grs. x, aq. ad ʒi, one ounce every four hours. This was administered by his nasal feed tube, and in ten days his chest had cleared up.

A track of granulation tissue was formed leading down to the upper end of the trachea, which was about 1½ in. from the skin surface. The patient was given a Durham lobster-tail tracheotomy tube, which was then fitted with a Tapia's artificial larynx, with remarkable success, his speech, although nasal in character, was very easily understood, and quite loud. The patient went home on September 13, 1925.

On September 29 he was readmitted to hospital for removal of secondary malignant glands of the neck. The left side of the neck was cleared of glands, the sternomastoid and internal jugular vein being taken away with the mass as a whole. The wound healed up in a fortnight. The patient when last seen was well, had put on weight, and was free from pain.

I am indebted to Mr H A Kisch, F.R.C.S., for permission to publish the notes of this case



# Practical Notes.

## *Cancer in Young Persons*

L Haynes Fowler notes that from the time of the earliest medical writings to those of the present day, cancer has been defined and discussed as a disease of middle or late life, and malignant disease is likely to be excluded from the realm of probability when the patient's age is 25 or less. Especially is this true of carcinomata or epitheliomata in contradistinction to sarcomata, which have long been known to be common in youth. He publishes, therefore, a clinical and pathological study of 112 cases of pathologically demonstrated carcinoma and epithelioma in patients under 26 years of age, operated on at the Mayo Clinic between 1914 and 1924, the youngest patient being aged 1 year and the oldest of the series 25 years. Of the series 21 carcinomata (18.7 per cent) were situated in the large intestine, and 14 (12.5 per cent) were carcinoma of the ovary. Twenty-three of the cases were epitheliomata, 5 of which were epithelioma of the cervix uteri, and 5 were epithelioma of the lip. It is evident, therefore, that cancer is much more common in youth than is generally recognized. Heredity is considered by the author to be the greatest etiological factor in carcinoma in young persons. Of the cases only 14.2 per cent were alive more than three years after operation — (*Surgery, Gynecology, and Obstetrics*, July, 1926, p. 73.)

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## THE PRACTITIONER

out so recently as 1852, by the French observer, Marchal, although diabetes had been known for centuries. Gangrene, they state, is a relatively frequent complication of diabetes, occurring, in their experience, in 7 per cent of all diabetic cases. Diabetic gangrene has a notably high death-rate, 23 per cent of the authors' cases having died while under treatment in the hospital, the most important immediate cause of death being infection. The treatment of gangrene consists in the employment of medical or surgical measures, but the authors' results with medical treatment have been disappointing. Insulin, however, has had an appreciable effect in lowering the death-rate of the surgical treatment of diabetic gangrene, before the employment of insulin 25 per cent of gangrenous cases treated by any method died, while since its employment 18 per cent have died. With insulin the patients are made free of acidosis and prepared for operation in a few hours, and are able to eat an adequate diet shortly after operation — (*Boston Medical and Surgical Journal*, June 24, 1926, 1155)

### *The Treatment of Tuberculosis by Gold Salts.*

V Cordier, C Gaillard, and Levrat present the results of the treatment of a series of cases of tuberculosis by gold salts, the particular salt employed by them being thiochrysine, given by intravenous injection in doses of 0.05 and 0.1 gram, or in some cases 0.2 and 0.4 gram, in a solution of 1 to 2 c cm twice-distilled water, once a week. In their consideration of the results in fifty-eight patients the authors have neglected functional signs, and have taken into consideration physical signs only. Four cases were worse after the thiochrysine, all of them advanced cases, nineteen cases were not appreciably improved, seven cases were doubtfully improved by the thiochrysine, as the improvement might have been due entirely to sanatorium treatment, seven cases showed slight improvement, and in eight cases there was distinct improvement. The remaining cases in the series were still under observation, the period of treatment not being sufficiently long to form conclusions — (*Journal des Praticiens*, June 26, 1926, p 442)

### *The Function of the Appendix*

Moutier and Fouché suggest that the appendix has a certain endocrine function, and that its insufficiency may be gradually compensated in chronic cases. They base this suggestion on a series of cases operated upon at the onset of appendicitis. In five cases obesity followed the operation, in three cases there were disturbances of the ovarian functions, including dysmenorrhœa or amenorrhœa with hyperthyroidism, in two cases these seemed to be a development of an infantile syndrome — (*Presse Médicale*, April 28, 1926, p 532)

### *The Treatment of Inoperable Carcinomata*

H Stephan has treated inoperable carcinomata by the operative reduction of the suprarenal tissue, removing the left suprarenal capsule in a series of eleven cases. His reason for this was that he



had come to the conclusion that the beneficial results from deep X-ray treatment of carcinomata arose from the increase in the defensive powers of the connective tissue cells, and that the reason why certain cases of carcinoma did not respond to deep X-ray treatment did not depend on the nature of the cancer cell nor on the dose of the rays, but on a deficient ability on the part of these particular cells to respond to the stimulus. In the later stages of a number of cases of inoperable carcinoma, which had proved refractory to X-ray treatment, he therefore removed the left suprarenal capsule, and subsequent treatment by smaller doses than formerly of the X-rays was followed by quite a severe reaction. On microscopic examination of the suprarenal capsules removed, the outer layer of the cortex was found to be atrophied, but no other changes were present — (*Deutsche Zeitschrift für Chirurgie*, April, 1926, p 170)

## *Surgical Treatment of Asthma.*

M Leriche observes that bronchial asthma is due to a spasm of the muscles of Reissessen, the motor innervation of which is furnished by the vagus nerve, but the sensory route of the reflex is not precisely known, though it is suggested that the pulmonary sensory nerve fibres go by way of the sympathetic and the stellate ganglion. Dr Leriche gives notes of a patient who had had attacks of asthma for two years. He carried out an ablation of the left stellate ganglion under local anæsthesia, and improvement in the patient's condition was immediate and durable, no further attacks of asthma having been experienced fifteen months afterwards — (*Le Progrès Médical*, July 3, 1916, p 1041)

## *Treatment of Aural Suppuration by Zinc Ionization*

T B Jobson notes that the results obtained by aurists who have used zinc ionization for the treatment of aural suppuration are conflicting, the reports of cures varying from 25 to 80 per cent. He points out that in a case of middle ear suppuration with a small perforation the mucosa is thickened and the cavity contains mucus, if the external meatus is syringed out and then filled with the zinc solution, only a negative result can be expected. The case is different in a chronic suppurating ear with a large perforation and a thin edge of membrane remaining, in this case the cavity is accessible and a favourable result may be expected. He looks upon cases with a small perforation as unsuitable for ionization—the perforations must be large enough to admit easily the intra-tympanic cannula, so that the pus can be washed out and replaced with zinc solution. Mr Jobson performs a careful and minute toilet of the middle ear before ionization, instilling a cocaine and adrenaline solution, after washing out, to shrink the mucosa and open up pockets, before finally filling with the zinc solution. He emphasizes that the poor results obtained by some workers are due to failure to recognize the sphere of action of the ion, to its use in unsuitable cases, and to neglect of sufficient care in technique — (*Journal of Laryngology and Otology*, June, 1926, p 383)

## PRACTICAL NOTES

### *The Protection of the Perineum in Labour.*

A Villarama states that the importance of a good perineum after childbirth cannot be over-emphasized. Most of the uterine displacements and cases of prolapse seen in his practice have been due to relaxation of the perineal floor and to the patient's early return to her daily work. The best prophylactic measure, therefore, is avoidance of tears. Dr Villarama's own results prompt him to advocate the application of low forceps both for shortening the second stage and as a better means of protecting the perineum, especially in the presence of a high perineum (i.e. one which measures from  $1\frac{1}{2}$  to 2 inches from the fourchette to the anal opening). The size of the infant has apparently little influence upon perineal laceration. A badly repaired perineum (one which is seemingly restored but is not supported from beneath by good union of the muscular and fascial tissues) is predisposed to laceration on subsequent deliveries. Dr Villarama emphasizes the importance of perineal protection, but does not agree with the popular practice of making an incision when laceration seems imminent; he prefers to allow the head to dilate the perineum gradually, allowing the entire vaginal orifice to dilate slowly, and delaying expulsion for at least ten minutes — (*American Journal of Obstetrics and Gynecology*, June, 1926, p 823)

### *Heart Disease and Pregnancy*

G H Hunt and J M H Campbell publish the results of an investigation by the former (before his untimely death) into the problem of the mutual influence of pregnancy and heart disease, a series of 156 cases having been studied. The danger of pregnancy is especially the increased nutrition and load, and of labour, the increased muscular strain. To the two questions "Ought a woman with heart disease to become pregnant?" and "If she does, what treatment should be adopted?" varying answers have been given by different authorities, among these, some deny that any useful prognosis can be given by examination of the heart. Dr Hunt came to the conclusion that provided the heart is not enlarged, patients with mitral disease stand pregnancy well, and there is not much extra risk. If the heart is enlarged, the risk is increased, and it does not make much difference whether the valvular lesion is aortic regurgitation or mitral stenosis. The amount of extra risk depends on the degree of enlargement and the treatment which can be adopted during pregnancy. In auricular fibrillation the results are so disastrous that pregnancy should be prohibited — (*Guy's Hospital Reports*, April, 1926, p 133)

### *Intestinal Origin of Pernicious Anæmia*

Knud Faber has formed the opinion that pernicious anæmia is due to an intoxication arising in the intestinal canal, and has carried out a thorough study with this end in view. Typical pernicious anæmia can be observed in a large number of cases where bothrioccephalus is present in the intestinal canal, and it is usually

had come to the conclusion that the beneficial results from deep X-ray treatment of carcinomata arose from the increase in the defensive powers of the connective tissue cells, and that the reason why certain cases of carcinoma did not respond to deep X-ray treatment did not depend on the nature of the cancer cell nor on the dose of the rays, but on a deficient ability on the part of these particular cells to respond to the stimulus. In the later stages of a number of cases of inoperable carcinoma, which had proved refractory to X-ray treatment, he therefore removed the left suprarenal capsule, and subsequent treatment by smaller doses than formerly of the X-rays was followed by quite a severe reaction. On microscopic examination of the suprarenal capsules removed, the outer layer of the cortex was found to be atrophied, but no other changes were present — (*Deutsche Zeitschrift für Chirurgie*, April, 1926, p 170)

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# Reviews of Books.

*Diseases of the Nose and Throat* By SIR ST CLAIR THOMSON, M D ,  
F R C P , F R C S Third edition Pp 943 24 plates and  
379 illustrations London Cassell & Co , Ltd 45s net

SIR ST CLAIR THOMSON'S *magnum opus* has been well described as "the laryngologist's Bible," and the foundations which he laid down in 1911 were so well and truly laid that there has been but little need for radical alteration fifteen years later, in spite of the great progress made in rhino-laryngology, and the few entirely new sections deal with rare or obscure conditions. Some noteworthy revisions have, however, been made in the sections relating to cocaine substitutes, ozæna, dilatation and stenosis of the œsophagus, and malignant disease of the larynx. Tonsillotomy, or partial removal of the tonsil, has rightly now been omitted, as has been the formerly much-trumpeted but unsatisfactory method of facial repair by paraffin injection. The chapter on operations has been fully revised, and a number of new operative procedures have been added, while radium, X-ray treatment, and diathermy have naturally received more attention. The illustrations have been increased in number, and some, particularly the radiograms, have been improved in quality. The work as a whole reflects credit on British laryngology and on its eminent author.

*The Clinical Examination of the Nervous System* By G H MONRAD-KROHN, M D (Oslo), M R C P , M R C S , with a foreword by  
T GRAINGER STEWART, M D , F R C P Third Edition Pp  
201 London H K Lewis & Co , Ltd 7s 6d net

THE fact that this book has reached a third edition is alone sufficient evidence of its usefulness, and it would be difficult to find another work which affords such an example of condensation without sacrifice of lucidity or completeness. Disorders of the nervous system present many pitfalls, and probably occasion more errors of diagnosis than any other group of affections. The differentiation, for example, between hysteria and early disseminated sclerosis may be extremely difficult, and often only detailed and accurate observation of the physical signs will enable a firm opinion to be given. Dr Monrad-Krohn's book is an invaluable guide in these circumstances. Of pocket-book size, it nevertheless contains a full account of the clinical examination of the nervous system. The numerous signs and symptoms resulting from lesions of the brain or nerves are described, and sections are devoted to simulation, electrical examination, investigation of the cerebro-spinal fluid, intelligence tests, pharmacological tests of the vegetative nervous system, etc. These are illustrated by excellent plates. The book can be strongly recommended as a thoroughly useful, trustworthy and succinct guide to the diagnosis of affections of the nervous

promptly cured in these cases on expulsion of the worm. It is also frequently seen to occur in patients with stricture of the small intestine; the pernicious anæmia in these patients has quite a typical blood picture. Recently Seyderhelm seems to have succeeded in experimentally producing anæmia of the pernicious type in dogs in which he had caused a chronic intestinal stricture by tying a piece of fascia round the gut. Anæmia is very often observed in patients with sprue, the blood changes in sprue greatly favour the hypothesis of the intestinal pathogenesis of Addison's disease. Well developed gastritis is constantly present in pernicious anæmia, and the author has come to the conclusion that the gastritis is primary to the anæmia and in some way contributes to its occurrence —(*Annals of Clinical Medicine*, April, 1926, p. 788)

## *Spread of Foot-and-Mouth Disease by Human Carriers*

O. Kling and A. Hojer insist that foot-and-mouth disease in cattle is spread by healthy human carriers or by persons in whom the infection is latent, and the evidence which they submit appears to confirm their opinion. Their investigations show that a human carrier can harbour the virus of the disease for as long as two months. Nearly all of the human carriers acquire the virus from milk or from another human carrier. On human mucous membranes the virus retains its virulence for a long time, but it soon loses its virulence on the bare skin or in clothes. The authors have shown that a few human carriers may infect a whole large district —(*Comptes Rendus de la Société de Biologie*, March 12, 1926, p. 618)

## *A New Method for the Early Diagnosis of Pregnancy and the Prognosis of Sex*

R. Weiss describes a new test for the early diagnosis of pregnancy and the prognosis of sex, which is based upon the demonstration by Abderhalden that proteolytic fermentations appear in the animal organism following the parenteral administration of foreign substances, the ferments occurring in the serum and acting as solvents upon certain organic substrates, by inducing a catabolism to peptones which is demonstrable qualitatively and quantitatively. Abderhalden's original test was associated with many difficulties and sources of error, but the new test is so simple that it can be carried out by the general practitioner, as it requires no more technique and experience than a quantitative estimation of sugar. The new test takes its origin from the fact that naphthochinon sulphate of sodium gives a very characteristic dark coloration with amino groups, the intensity of which depends upon the amount of the amino groups contained in the solution. Dr. Weiss describes in detail the technique of the test, the requisites being that the blood should be taken in a fasting state, hæmolytic serum must be rejected, and sterility up to the time of deproteinization and accurate pipetting are necessary. A specially constructed outfit, called the sexognost, is useful, consisting of the necessary apparatus and reagents —(*Medical Journal and Record (New York)*, July 7, 1926, p. 33)



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No charge is made for the insertion of these notices the necessary details should be sent before the 14th of each month to The Editor, THE PRACTITIONER, Howard Street, Strand, London, W C 2, to secure inclusion

- ALLEN, Mary G B, M B Liverp.**, appointed House Surgeon to the Liverpool Maternity Hospital
- BEATTIE, W, M B, Ch B**, appointed House Physician to Sheffield Royal Hospital
- BLAKELOCK J H, M B, Ch B**, appointed Ophthalmic House Surgeon to Sheffield Royal Hospital
- BOURNE, A W, M B, F R C S Eng.**, appointed a member of the Honorary Consulting Staff to Willesden General Hospital
- BROWNE, F J, M D Aberd, F R C S Edin**, appointed to the Chair of Obstetric Medicine in the University of London
- CALLCUTT, J S, M B, Ch B**, appointed Assistant Casualty Officer to Sheffield Royal Hospital
- CLAPHAM, H M R C S, L R C P**, appointed Medical Referee under the Workmen's Compensation Act, 1925, for the Districts of the County Courts of Biggleswade Huntingdon Peterborough St. Neots and Thrapston and Oundle (Circuit 35) vice W. Mackintosh, deceased
- CURRIE, S H, M R C S, L R C P**, appointed Certifying Factory Surgeon for the Swancombe District, Kent
- DUKE-ELDER, W Stewart, M A, B Sc., M D St. And., F R C S Eng.**, appointed Assistant Ophthalmic Surgeon to St. George's Hospital London S W
- FAIRCLOUGH, J H, M B, Ch B**, appointed Assistant Casualty Officer to Sheffield Royal Hospital
- FLINT, R L, M B., B Ch**, appointed House Surgeon to Sheffield Royal Hospital
- FREW, W D, M C M R C S, L R C P**, appointed Medical Referee under the Workmen's Compensation Act, 1925, for the Kilmarnock District, vice Dr W. McAllister, deceased
- FRIZELLA, E., M B M Ch**, appointed Casualty Officer to Sheffield Royal Hospital
- GERRARD, W I, M D, M R C P, D P H.**, appointed Honorary Consulting Physician to King George V Memorial Hospital Malta
- HOLMES, E, M B, M R C S**, appointed Resident Surgical Officer to Sheffield Royal Hospital
- HOWELL, B Whitechurch, F R C S Eng.**, appointed Honorary Surgeon to Cheyne Hospital for Children, Chelsea.
- HUGHES, Edward, M B Liverp.**, appointed House Surgeon to the Liverpool Maternity Hospital
- JAGO J L, M B., Ch B.**, appointed Aural House Surgeon to Sheffield Royal Hospital
- JAGO, J W, M B., Ch B**, appointed House Surgeon to Sheffield Royal Hospital
- JOE, Alexander, D S C., M D., D P H., D T M & H.**, appointed Medical Superintendent North Western Hospital Metropolitan Asylums Board vice E W Goodall, O B E., M D
- MITCHELL, J C D, M B, Ch B Glas.**, appointed Certifying Factory Surgeon for the Berwick District, Northumberland
- PHILLIPS, L G, M S M B, B S C Lond., F R C S Eng.**, appointed Honorary Gynaecologist to Willesden General Hospital
- PLATT H, M D Manch, M S Lond., F R C S Eng.**, appointed Honorary Clinical Lecturer in Orthopaedics in the University of Manchester
- RAMAGE, J H M B., Ch B, Glas.**, appointed Certifying Factory Surgeon for the Neilston District, co. Lanark
- RICHARDSON, A H, M R C S, L R C P**, appointed Radiologist to the Bury Infirmary
- SIMPSON, Harold C, L M S S A, D P H.**, appointed Assistant County Medical Officer of Health for Cumberland
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- SWAINSTON, Elliot, M D, B S Durh., D P H Camb.**, appointed Medical Superintendent, South Western Fever Hospital, Metropolitan Asylums Board
- SYKES, E M B, Ch B.**, appointed House Physician to Sheffield Royal Hospital
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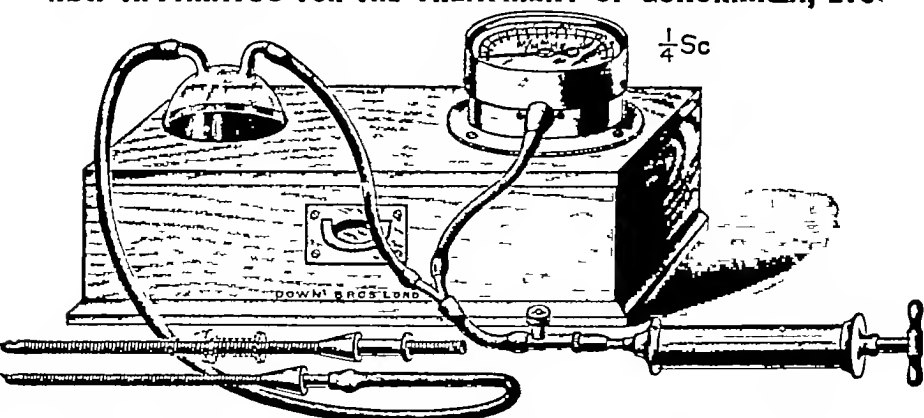


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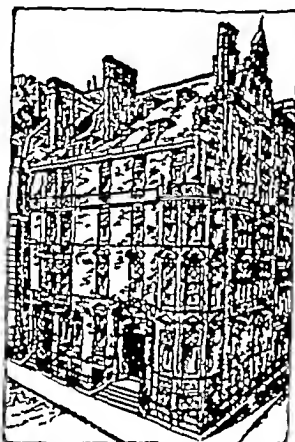
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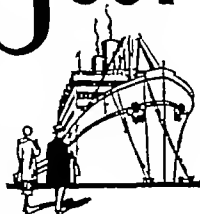
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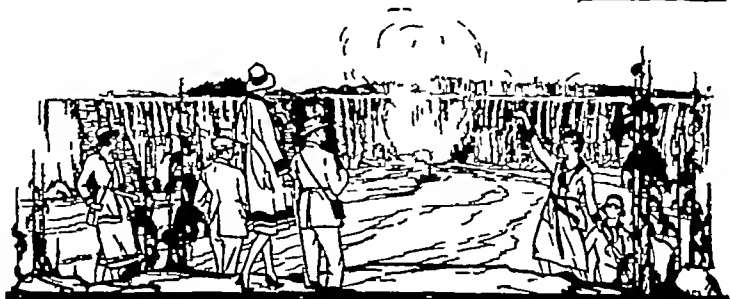
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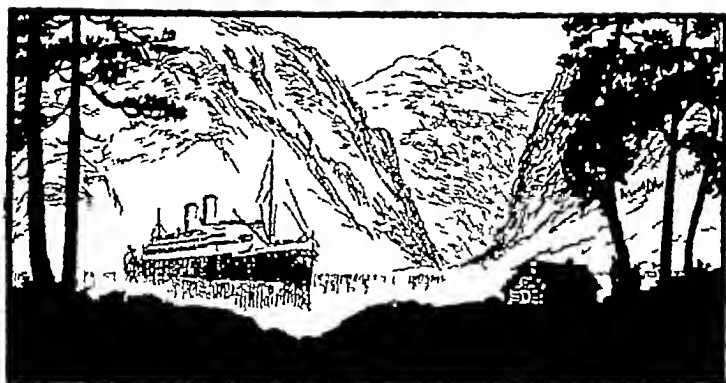
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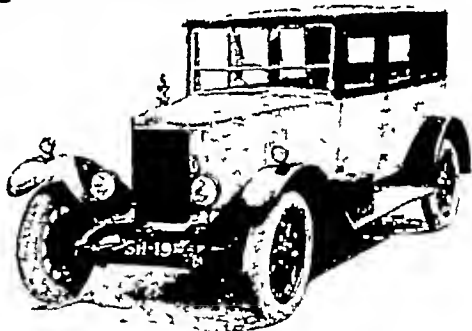
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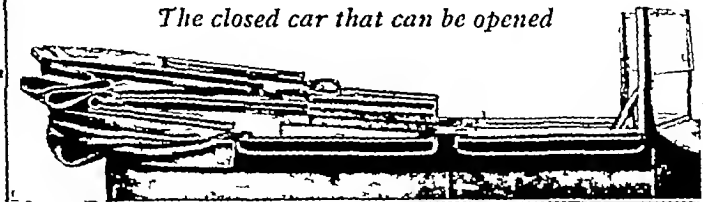
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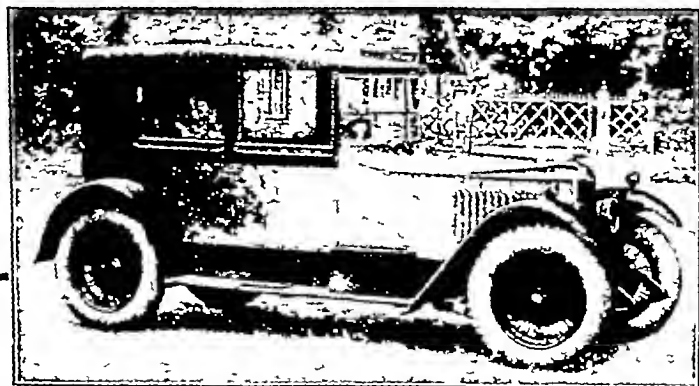
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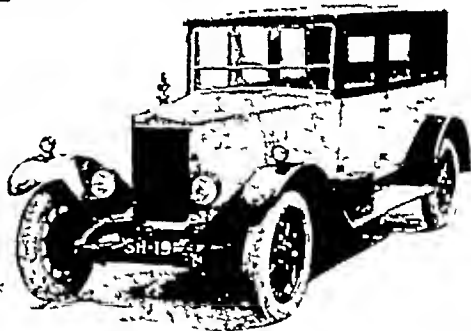
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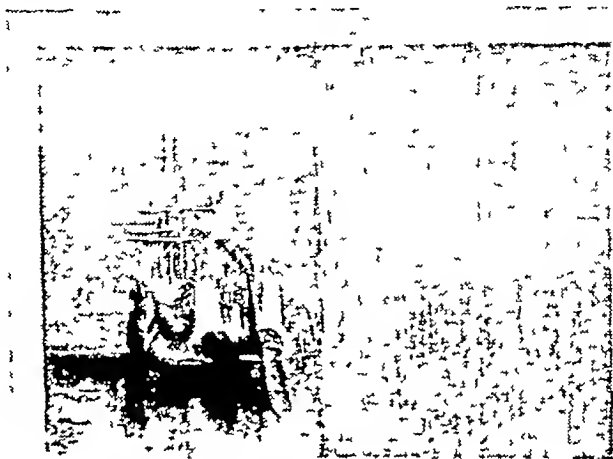
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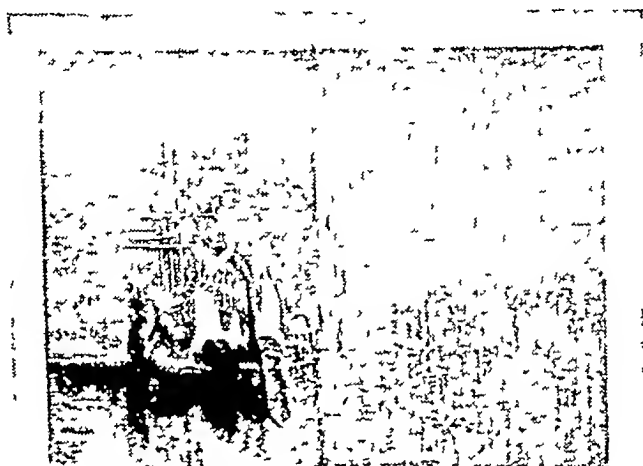
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## Intestinal Disinfection

## ARTERIO-SCLEROSIS

IT is an old adage that a man is 'as old as his arteries,' meaning that degenerative changes in the arteries are largely responsible for senility.

The modern view is that arterio-sclerosis is produced by increased blood-pressure, and that increased blood-pressure results from the absorption of "pressor" substances developed by putrefactive bacteria in the intestine.

To retard the activity of the putrefactive bacteria, Metchnikoff introduced the soured milk treatment, but how much better it is to use an antiseptic substance. The ordinary so-called intestinal antiseptics, such as Salol, possess little real disinfectant power, and more potent germicides, such as Phenol, are absorbed, and, in sufficient dose, are toxic.

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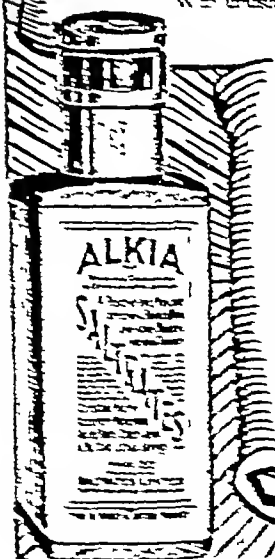
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Its particular importance for pharmacological effects is the concentration of its salts, as may be seen by the following analysis:—

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Sulphate of sodium	12.462 "
Sulphate of calcium	1.071 "
Sulphate of potassium	0.438 "
Chloride of magnesium	0.809 "
Bicarbonate of calcium	0.400 "

According to researches made by Prof. Detolt, of Lausanne, the osmotic pressure of the Birmenstorf waters, as well as their freezing point (in contradistinction to all other mineral waters) are very similar in their composition to human blood, viz. —

	Osmotic pressure.	Freezing point.
Human blood	6.74 atmospheres	0.56° Centigrade
BIRMO	6.35 "	0.77° "

The mineral water most similar to that of Birmenstorf has an osmotic pressure of 12.28 atmospheres (almost double that of the blood), and its freezing point is at 1.021° C.

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MEDICAL AND MEDICAL

XV

## THE PRACTITIONER

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Sulphate of potassium	0 438 "
Chloride of magnesium	0 809 "
Bicarbonate of calcium	0 406 "

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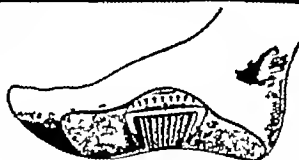
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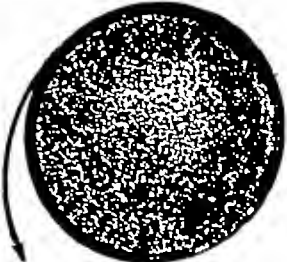
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**CHARGES**

Largely prescribed in

**GOUT, RHEUMATISM,  
ECZEMA, SCABIES,  
and all SKIN DISEASES.**

Baths prepared with SULPHAQUA possess powerful antiseptic, antiparasitic, and analgesic properties. They relieve intense itching and pain, are without objectionable odour and do not blacken the paint of domestic baths.

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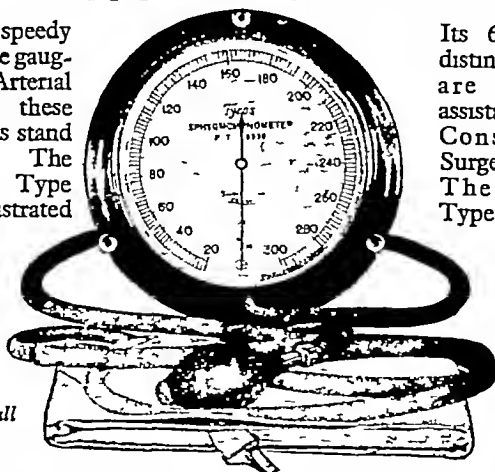
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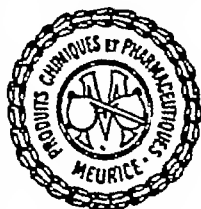
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In an acid medium Urenile liberates a notable quantity of Ammonia which neutralizes immediately the excess of acid present in acidosis —

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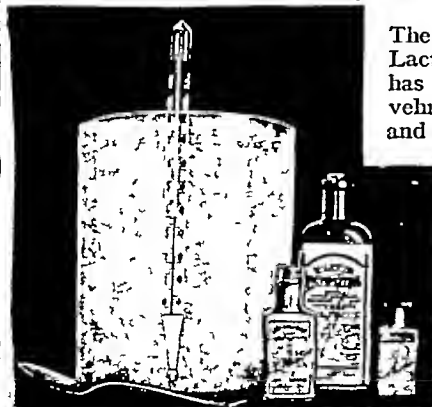
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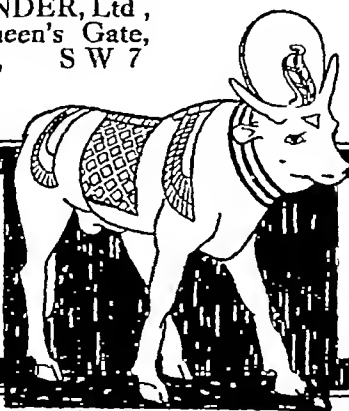
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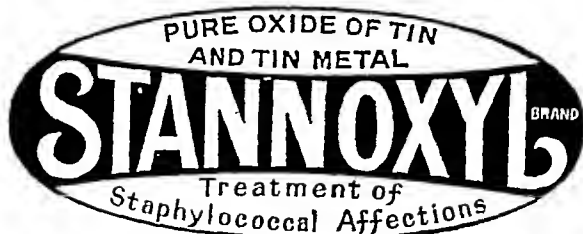
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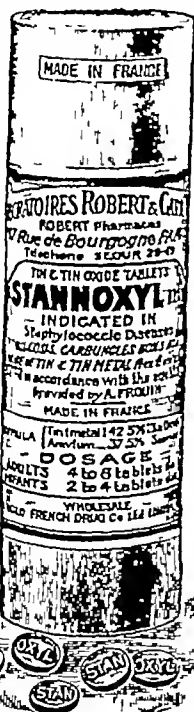
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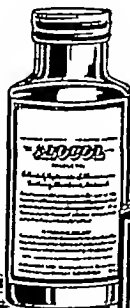
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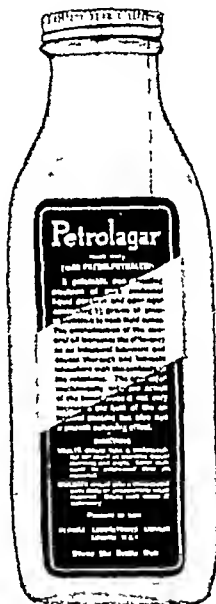
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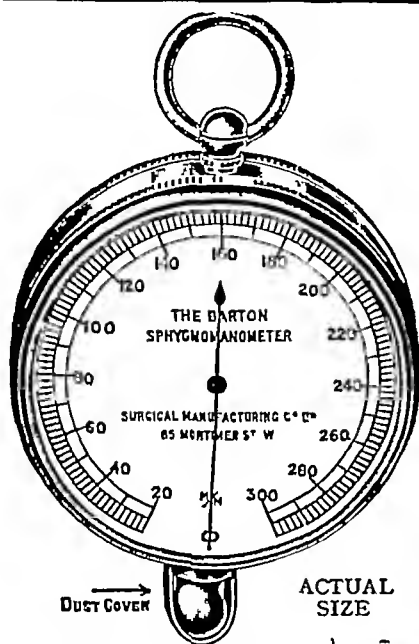
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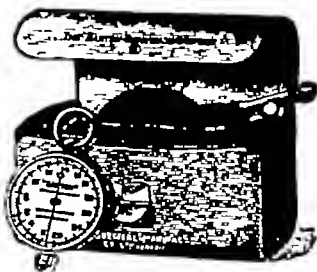
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IN the "Journal D'Urologie," Paris, April, 1925, M. Negro and M. Sacchi recorded a number of interesting cases in which they employed Detoxicated Gonococcal Vaccine at the Lariboisière Hospital. After mentioning that they had injected enormous doses of this vaccine without reaction, they summarise their results as follows —

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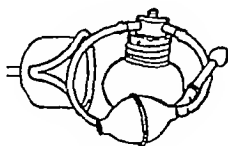
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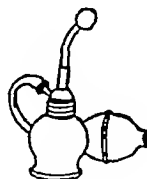
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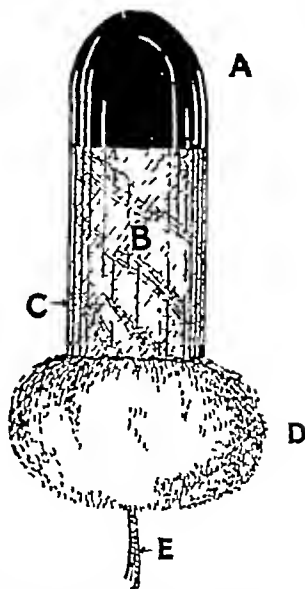
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# THE PRACTITIONER

JULY

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## Hygiene in the Royal Navy.

By SURGEON-VICE-ADMIRAL SIR JOSEPH CHAMBERS,  
K.C.B., C.M.G., M.B., B.A. *Director-General, Medical  
Department, Royal Navy, and*

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ALTHOUGH the principles of hygiene are universal, their methods of application must vary in accordance with the circumstances under which they have to be carried out, and as the conditions of existence on ship differ considerably from those obtaining on shore, it is perhaps advisable to preface this article with a brief outline of hygienic administration in the Navy. In view of the fact that ships are frequently detached on isolated service every medical officer, in addition to his ordinary medical and surgical duties, has to fulfil the functions of medical officer of health to the vessel in which he is serving, and consequently has to advise his commanding officer upon all questions relating to the protection of the health of the crew and to suggest to him any measures considered necessary for this purpose. He must make every



### *What Does the Clinical Evidence Show?*

The only safe guide to a correct estimation of the therapeutic value of a drug in any given disease is that afforded by skilled observation on abundant clinical material extending over prolonged periods

Although this is merely stating a truism, it is one which it is necessary to stress in view of a tendency, occasionally shown, to arrive at a judgment based on a preconceived theory, which does not wholly square with observed facts

Judged by this standard, what is the record of Atophan in the treatment of rheumatism, gout, and allied diseases?

Introduced in 1911 by Nicolaier and Dohrn, this drug quickly attained a world-wide reputation by reason of its remarkable property of promoting the excretion of uric acid to a degree hitherto unobtainable (100-300 per cent in 1-2 hours) This fact was confirmed experimentally and clinically by observers in nearly all countries

At the same time it was shown that this phenomena was accompanied by a rapid alleviation of the symptoms in cases of rheumatism, gout, sciatica, neuralgia, etc—the joint symptoms subsided, pain was relieved, and inflammation arrested

Obviously, in many of these cases, these results could not be explained by the mere elimination of uric acid, and in the course of further clinical trials it was demonstrated that the drug is many-sided in character and possesses other properties which are not of less importance than that which first brought it into prominence

The facts concerning Atophan, which are not questioned, as elicited by these trials, are as follow

- (1) Uric Acid is eliminated to an unprecedented extent
- (2) Inflammation is arrested
- (3) Bacterial poisons are neutralized or modified
- (4) Pain is relieved
- (5) Temperature is reduced
- (6) Gout, rheumatism, sciatica, neuralgia, and allied diseases are influenced in a very beneficial manner

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endeavour to acquaint himself with the conditions of health prevailing at the ports the ship is likely to visit, and veto the introduction into the ship of any water, drinkables, and foodstuffs which could possibly convey disease (The special precaution concerning water will be dealt with later.) Periodical lectures have to be given to the whole ship's company concerning personal hygiene—including dental hygiene, venereal diseases, and the evils resulting from the abuse of alcohol. Although inoculation against the enteric groups of diseases and revaccination is carried out at the home ports just before the men are drafted for foreign service, the medical officer of the ship must satisfy himself that every individual on board is adequately protected by referring to the records of the last inoculation or revaccination. Should over-crowding or defective ventilation obtain in any mess, deck, or working space he must report the same to his captain and suggest remedies for the amelioration of these conditions.

In malarial districts he must supervise the arrangements of mosquito netting and arrange for the administration of prophylactic doses of quinine. In the presence of cholera he must arrange for protective inoculation.

In fleets or squadrons hygienic responsibilities are centralized as far as is compatible with efficiency, being relegated to the senior medical officer of the flagship, who is designated the fleet or squadron medical officer, as the case may be. This officer stands in the same relation to the admiral concerning all questions of hygiene of the fleet, or squadron, as the medical officer of an individual ship does to his captain. This arrangement does not of course absolve the individual medical officer from the responsibilities connected with his own ship, and in the event of difficulties or doubts arising they must be referred to the fleet medical officer. The

## HYGIENE IN THE ROYAL NAVY

fleet or squadron medical officer attends the admiral at the quarterly inspections, which are carried out on all commissioned ships, and has to render a special report concerning all matters of medical and hygienic interest, together with any recommendations he considers necessary for the health of the personnel. These reports are forwarded by the admiral to the Admiralty and are passed to the Medical Director-General, who advises necessary action. Any matter of urgency is dealt with locally.

At each of the Home ports—Chatham, Portsmouth, Devonport, and Rosyth—and also at Malta, special hygiene officers are appointed who are known as naval health officers, and their duties are analogous to a combination of those of a port medical officer and a medical officer of health; they all hold diplomas of public health, and are responsible for the sanitary supervision of all ships, barracks, dockyards, and other naval establishments situated in the command. They are available for expert advice upon all health questions arising in their respective areas and work in liaison with the local port medical officer and medical officers of health, and also with the sanitary officers of the military and air forces, whereby a system of exchange of information of mutual value and interest is established. These officers supervise the food, milk, and water supplies of all ships and establishments.

Before the Director of Naval Contracts accepts any tender for the supply of meat, bread, milk, etc., the premises of the intending contractors are inspected by a naval health officer, and unless they fulfil the required conditions the tenders are rejected. The premises of those already holding contracts are also periodically inspected in order to ensure that the necessary standards are being maintained.

The naval health officers report weekly to the medical



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department of the Admiralty, detailing all matters of importance and interest.

The Royal Naval Medical School at Greenwich, apart from its teaching, pathological, and research work, carries out analyses of samples of air, water, food, etc., sent by ships and establishments; here also are prepared, under the supervision of the professor of pathology, prophylactic vaccines for the whole Navy. This establishment is under the direction of the Professor of Hygiene, who, in addition to his other numerous duties, advises senior medical officers regarding their post-graduate studies; in connection with this it should be remarked that every effort is made to give officers facilities for obtaining public health diplomas. Inspection of the Navy List shows that medical officers of the Royal Navy have certainly taken full advantage of these opportunities.

At the Admiralty the Medical Director-General is assisted by an officer who deals with all matters pertaining to hygiene. Every six months the naval health officers of the Home ports meet at the medical department to discuss hygiene questions affecting the Navy, and for the purpose of formulating fresh measures which experience and altered conditions render desirable.

Plans of all ventilation and sanitary arrangements of new ships are forwarded to the Medical Director-General by the Director of Naval Construction for approval and suggestions.

### AIR AND VENTILATION.

Considering that the personnel of the Navy is composed of men selected on account of physical fitness, inured to a high standard of discipline, and consequently more amenable than the ordinary citizen to the imposition of any health regulations it may be deemed necessary to impose, it would appear at first

## HYGIENE IN THE ROYAL NAVY

sight that the hygienic problems of the naval service are less formidable than those obtaining in civil communities, this supposition is strengthened by the fact that sailors spend so much of their time in ships, where by the methods described elsewhere it is possible to ensure the purity of the food they eat and the water they drink, but when we deal with the purity of the air they breathe we touch upon an outstanding difficulty of naval hygiene which tends to counterbalance the aforesaid advantages.

The main desiderata of a modern battleship are, a maximum amount of fighting efficiency—offensive and defensive—combined with mobility, contained in the minimum of space; the number of men necessary to fight and propel such a vessel is, from a hygienic point of view, out of all proportion to the available cubic space, a further complication exists, owing to the fact that in order to maintain buoyancy in the event of the hull being pierced by a shell or torpedo it is necessary to subdivide the interior into numerous water-tight compartments, many of which have to be below and behind armours. Such spaces have to be dependent on artificial ventilation and illumination for their supply of air and light; and as the ships are built of steel there is an additional difficulty caused by the conduction of heat from the engine and boiler rooms to living and working spaces. In these circumstances it is obviously impossible to allow each individual the 600 cubic feet of air space considered the minimum on shore; consequently, an effort has to be made to ascertain the maximum amount of space per head that can be supplied in sleeping and living compartments without interfering with the fighting value of the ships. This problem together with the whole question of ventilation was exhaustively investigated by a special committee of experts which was convened in 1913, the findings of which have formed the basis—as

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far as space and ventilation are concerned—of modern battleship construction. It was decided that each man should have a minimum allowance of 200 cubic feet and that the spacing between hammocks should not be less than 20 inches, and in order to counteract the necessary curtailment of space, definite recommendations were laid down concerning artificial ventilation with specific details regarding the arrangement of electrically-driven motor fans, trunking, louvres, exhausts, etc.

The King's Regulations ordain that the commanding officer of every ship is to organize a proper ventilation party, a member of which is the medical officer. This party has to satisfy itself that adequate ventilation is maintained; all fans, trunking, inlets, exhausts, etc., have to be periodically inspected, and anemometer readings taken to ascertain whether the velocity of the air driven by the fans is satisfactory and efficient. In the event of the air or ventilation of a living space appearing defective, the medical officer has to collect air samples and forward them to the professor of hygiene at the Royal Naval Medical School, Greenwich, for analysis. Each sample has to be accompanied by a series of kata-thermometer and wet and dry bulb thermometer readings, together with details concerning the cubic space of the compartment in question and the number of men occupying it. Copies of the remarks and recommendations of the professor of hygiene resulting from these analyses are transmitted to the ship and to the Medical Director-General, the latter advising the Director of Naval Construction regarding any alterations or steps he considers necessary to ameliorate hygienic defects if they exist.

To lessen the conduction of heat from the boiler and engine rooms to living spaces, lagging by non-conducting material is employed as far as is practicable. In warm climates free use is made of portable electric

## HYGIENE IN THE ROYAL NAVY

table fans. The submarine, and the probability of free use of gas as a weapon of offence in future warfare, give rise to special difficulties regarding ventilation, but owing to their confidential nature the methods of dealing with them cannot be dealt with here, but it is gratifying to note that a most efficient and effective air purifier has been evolved by the ingenuity and research of three members of the staff of the Royal Naval Medical School, Greenwich. A special Admiralty Lighting Committee has recently made most valuable recommendations for the illumination of ships, a highly important detail in view of the fact that many parts of a modern fighting ship have to rely entirely on artificial lighting

### WATER

The most scrupulous care is taken to guarantee the absolute purity of the water supply of the Navy. At sea, ships generally distil their drinking water, which is stored in special tanks lined with rosbonite. In harbour the water supply is obtained from the shore, being transported in special water-carriers, but only that which is free from all suspicion is allowed on board, and as an additional safeguard this is subjected to chlorinization. Samples are sent from time to time to the Professor of Hygiene for analysis in order to make sure that the process has been effective. Special precautions are in force to maintain the cleanliness of all hoses and pipes through which the water is conducted, and the manholes for access to the tanks have to be situated in places where there is no likelihood of contamination. The cleansing of the tanks both in the carriers and ships is carried out under the immediate supervision of a medical officer. All men employed for this purpose have to wear sterilized overall suits and footgear, and are medically examined before entering the tanks to make sure they are free from any complaints whereby they might pollute the

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water supply.

Recently a sterilized mixture consisting of 20 per cent quicklime and 80 per cent chlorinated lime has been introduced for chlorinating purposes and has proved most satisfactory.

## DIET.

It is sufficient to remark that the rations of the seaman are most liberal and varied and based upon modern physiological requirements. The fact that "deficiency" diseases have ceased to exist in the Navy speaks for itself. The rum ration is still allowed, and in the tropics "lime juice" is issued, but as a thirst-quenching drink and not as an antiscorbutic.

## MILK.

A very high-standard condensed milk is the usual source of supply on sea-going ships. In shore establishments and harbour ships fresh milk is allowed, but it must be boiled or pasteurized before being consumed.

## TUBERCULOSIS AND OTHER INFECTIOUS DISEASES.

In view of the close proximity which ship life necessitates, the medical officer must take the utmost care to diagnose infectious ailments at the earliest possible moment and to arrange for rapid isolation; this applies particularly to tuberculosis. The King's Regulations instruct that every man below the age of thirty-six shall be weighed and have his chest examined every three months, should this examination arouse the slightest suspicion of tubercular trouble the first opportunity is taken to send the suspect to hospital for X-ray examination and observation. A patient being discharged to hospital suffering from actual or suspected tuberculosis has to be accompanied by a special report, giving details of the patient's family history, the number and position

## HYGIENE IN THE ROYAL NAVY

of his mess, a list of the previous ships in which he has had service, together with information concerning any other cases which have occurred in the ship. Should the hospital confirm the diagnosis a copy of this report is sent to the Admiralty, such information is of the greatest value for drawing attention to any ship or establishment which may be showing an undue incidence of tuberculosis; necessary steps can then be taken to scrutinize local conditions and to remedy any hygienic defects that may exist. As all cases of tuberculosis are invalided out of the service the report in question is of great assistance with regard to the decision as to whether the tuberculosis was attributable or non-attributable to conditions of service. Every encouragement is given to the men to sleep on the upper deck when climatic conditions admit of such a practice, and as far as is practicable they are made to sleep alternately head to foot. All infectious diseases are notified to the Admiralty, and after the occurrence of a case of this nature the patient's mess deck is disinfected and his bedding and clothes sterilized, all contacts being kept under close supervision. The larger ships are fitted with steam disinfectors.

Patients who have recovered from typhoid are periodically re-examined in hospital to ascertain if they are "carriers", should this examination prove positive the patient is retained in hospital. No one who has had typhoid may be employed in any capacity which entails handling food, nor may they be detailed for cleaning water tanks. Rigid precautions are enforced upon contractors to preclude the infection of anthrax from shaving brushes

### VENEREAL DISEASES

Unfortunately this article would be incomplete without reference to these diseases, which, in spite of the most strenuous endeavours, are still

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## HYGIENE IN THE ROYAL NAVY.

the official health returns of the Navy of twenty-five years ago with the latest publications will realize that the energy and foresight of those responsible for the health of the Royal Navy have been amply repaid by the satisfactory results of their efforts. There have been few greater hygienic triumphs than the consistent good health of the personnel of the Grand Fleet during the Great War, but this was only obtained by persistent attention to sanitary details and devotion to duty by the medical officers, combined with loyal and intelligent co-operation of all officers and men.

Were it possible for Dr. Tobias Smollett to return to the Navy of to-day, he would perhaps, with his robust although embittered mentality, be inclined to think that the meticulous attention devoted to the health and comfort of the modern seaman would tend towards degeneracy and effeminacy, but the heroism in the face of danger and fortitude in pain displayed by our men at Zeebrugge and Jutland proves that the well-cared-for bluejacket of the twentieth century has lost nothing of the bravery and endurance of the harshly-treated, ill-fed, but intrepid seamen who fought with "Roderick Random" under Vernon at Cartagena in 1741.



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responsible for a considerable percentage of sickness in the Navy. In the lectures previously referred to, medical officers impress upon the men that the only certain way of avoiding infection is continence, reminding them that such a state is not only compatible but conducive to perfect health, and with a view to directing the sexual impulse into other channels encourage them to indulge in all forms of healthy recreation and exercise. The evils resulting from these diseases, together with the perils of delaying treatment, are clearly pointed out, and the avoidance of alcohol on account of intoxication lessening self-restraint is emphasized; but as there is always a certain number of people who will run risks in spite of every warning it is therefore necessary to give instruction in personal prophylaxis. Preventive packages are supplied and the vital importance of using them immediately after running risks is explained. In addition, all ships and barracks are fitted with ablution rooms, where the men can wash on returning to their quarters. Anti-venereal propaganda films are shown at the home ports, each exhibition being prefaced with an address by a medical officer. These measures have certainly achieved considerable success—at any rate at home—but the results have not been quite so encouraging in certain foreign stations, it must be remembered, however, that the sailor serving abroad is cut off from the restraining influence of home and friends. As a rule he goes ashore a complete stranger to his environment and is consequently an easy victim to the myrmidons of vice who infest so many ports. To counteract this, every effort is made to organize games for the men at such places, and these are of great assistance in keeping them out of temptation.

### CONCLUSION.

Statistics have been purposely avoided in this article, but those who are interested enough to compare

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to believe that the pain is chiefly due to the action of the gastric juice which is hurried into the duodenum before its acid content has had the opportunity of becoming neutralized.

Perhaps the most dramatic feature of the disease is the small size of the lesion which produces such far-reaching effects, for the ulcer is rarely much larger than the finger-nail, and sometimes no more than a few millimetres in diameter, and yet it may convert a strong, hearty, and happy man into an ill-tempered, dyspeptic invalid.

The number, variety, and severity of the complications of duodenal ulcer seem out of all proportion to the insignificance of the primary lesion, and it is difficult to find a satisfactory method of classification. Perhaps the most simple is to divide them into the acute and chronic.

### ACUTE COMPLICATIONS.

In this class we have hæmorrhage and perforation, and of these hæmorrhage is the more common. Every degree of bleeding is met with, from a slight oozing, which is only detected after careful investigation of the stools for occult blood, to a devastating loss resulting from the erosion of a large vessel, which possibly kills the patient forthwith. But fatal hæmorrhage is very rare; even hæmorrhage profuse enough to pour out of the duodenum into the stomach and cause hæmatemesis is quite uncommon, the most usual indication of the bleeding being melæna, a symptom frequently overlooked owing to the fact that so many of these patients are taking bismuth, and the stools are black already. But the black, tarry, sticky stool of melæna does not really very much resemble the dark, constipated stool of bismuth, and there should be little difficulty in distinguishing them.

How should we deal with profuse hæmorrhage from a

# The Complications of Duodenal Ulcer.

By CECIL ROWNTREE, F R C S

*Surgeon to the Cancer Hospital, and to the Dreadnought Hospital*

**F**EW cases of duodenal ulcer that are untreated for any length of time escape the addition to their normal symptoms of one or other of the more serious complications, which adequately treated cases usually avoid.

What may be regarded as the ordinary normal symptoms of a duodenal ulcer? The only one that is constant, persistent, and typical, is pain. It is true that it may vary in its character, its situation, or its periodicity, but every patient with a duodenal ulcer will at some time or another experience pain, which may be in bouts or spasms, may disappear for weeks or months at a time, may be much better in summer than in winter, but is none the less the one symptom that takes him to the doctor. He may not categorically state that the pain comes on one and a-half to two hours after meals, no matter what their nature, or that it is relieved by further food, or by one or other of the widely advertised remedies for chronic indigestion; but all these points can generally be elicited by careful inquiry.

These, then, are the normal symptoms of duodenal ulcer. To what are they due? Is the pain the result of irritation of the raw surface in the duodenum by the acid gastric juice, or is it due to spasmodic contractions of the gastric muscle induced by the presence of the ulcer? We know that in duodenal ulcer the muscular activity of the stomach is increased and that the food is unduly hurried from it, but in spite of this the X-rays do not show those irregular spasmodic contractions that are such a regular feature of gastric ulcer. It is easier

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with a case where the orifice is no more than a pin-hole, and the amount of material escaping is reduced to a minimum.

Two such cases have recently come under my observation:

In one there was four days' history, the symptoms were localized to the right side, where local tenderness and rigidity were present with some rise of temperature, and I found a tiny pin-hole perforation of the first part of the duodenum, already well shut off by adhesions, which would probably have completely cleared up

The second case was that of a man, who woke up one morning at 7 30 a.m. with rather acute pain in the right hypochondrium. I saw him, with Dr. Davie of Golders Green, within two hours, and found local rigidity of the right upper rectus with no alteration of temperature or pulse, a clean tongue and no distension. In fact, nothing but pain and rigidity. I opened the abdomen over the duodenum and found a pin-hole perforation from which a few drops of clear gastric juice had just escaped.

I think it probable that these minute perforations occur with greater frequency than is suspected, undergo spontaneous closure, and then provide those cases we see sometimes of patients with rather indeterminate symptoms who, on exploration, are found to have the first part of the duodenum tightly glued to the under surface of the liver. I operated upon such a case the other day, and the patient dated all her troubles from an attack of "gastritis" six years previously. There is little doubt that the alleged gastritis was, in fact, a pin-hole perforation, which became automatically sealed off, the duodenum becoming attached to the liver in the process.

In operating for perforated ulcer there is as yet no complete unanimity of opinion as to whether a gastro-enterostomy should be performed as well—that is to say, whether an attempt should be made to cure the ulcer as well as the perforation. It adds an undesirable fifteen minutes to the operation on a very ill patient, one is working with tissues already damaged, and I find that better results are obtained when nothing beyond closing the perforation is

duodenal ulcer? Should an operation be performed, and an attempt made to seek the bleeding point? Most emphatically no, for these patients are in no condition to stand what may very likely prove to be a difficult and prolonged operation. Moreover, a single hæmorrhage very rarely kills—it is the recurrence of hæmorrhage that is dangerous. The indications therefore are to give morphia and hæmoplastin, empty the stomach by the Dreyfus tube and keep it empty by the same means, give saline by the rectum, and only begin to consider the question of operation when the patient is recovering.

The fact of hæmorrhage having occurred is, I think, an additional argument in favour of the operative as against the medical treatment of duodenal ulcer, and if operative treatment be selected do not wait too long, but as soon as the patient's general condition justifies it, transfuse and operate.

*Acute Perforation* of a duodenal ulcer is a different problem, for here there is no room for discussion. The case instantly becomes surgical and should be operated upon forthwith. No matter how big the hole in the ulcer, it can be closed, and the results do not depend upon any such factors as the age and sex of the patient, or the situation of the perforation, but upon the time that is allowed to elapse before the case is dealt with. The actual technique is fairly well established. The perforation should be closed as tightly as possible by suture and a patch of omentum carefully applied to the damaged area. The abdomen is then closed with or without drainage, dependent upon the time that has elapsed since the perforation took place, and the amount of soiling of the peritoneum.

*Pin-hole Perforation.*—Most perforations are perfectly definite openings one-eighth of an inch or more in diameter, from which the fluid contents of the duodenum escape with the utmost ease, but one occasionally meets

## DUODENAL ULCER

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attempted.

#### CHRONIC COMPLICATIONS.

The chronic complications embrace a rather heterogeneous group of conditions, among which the following are the most interesting and important:

*Multiplicity of Ulcers.*—The occasional occurrence of more than one duodenal ulcer in the same patient is not so striking as the undoubted fact that in the vast majority of cases the ulcer is single. Why should it be solitary? Why, moreover, should its usual situation be the anterior surface of the first part of the duodenum? It is suggested that this is the point where the acid gastric juice impinges when ejected from the stomach, but it is difficult to believe that the aim of the pylorus can be so true. The presence of a co-existing gastric ulcer is a well-established complication which is no doubt sometimes overlooked, particularly when situated high up on the lesser curvature. It is an important point to have in mind as a possible cause of persistence of symptoms after gastro-enterostomy.

*Peri-duodenitis and Adhesions.*—It has already been indicated that one of the causes of adhesions round the first part of the duodenum may be the spontaneous healing by inflammatory exudate of a pin-hole perforation. It is not suggested that this is the cause in all those cases where the duodenum is firmly fixed to the liver or to the gall bladder. A marked degree of peri-duodenitis may no doubt result from the escape of organisms through the base of an ulcer which has never perforated, and conversely, inflammatory conditions of the gall bladder or bile ducts may spread to the duodenum and fix the two together by plastic exudate.

*Deformity.*—All ulcers tend to heal, and in doing so they produce scar tissue, but ulcers of the duodenum probably produce less than any other similar lesion. There is no comparison between the dense cartilaginous base of a gastric ulcer and the usual thin, papery floor

## DUODENAL ULCER

of an ulcer of similar extent in the duodenum. Indeed, it is often impossible to *feel* a duodenal ulcer, the white and puckered base of which is perfectly obvious to the eye. Occasionally, however, one meets a case where induration and thickening are so marked as to produce considerable deformation of the duodenum, and even to so much occlusion of its lumen as to lead to symptoms of pyloric obstruction

*Malignant Disease.*—Primary carcinoma of the duodenum has been recorded in the literature, but its extreme rarity in this situation affords one of the greatest mysteries of the pathology of cancer. Cancer of the stomach is one of the commonest forms of malignant disease, and only half an inch farther on in the duodenum it is almost unknown. Yet here apparently are all the factors generally regarded as favourable to its development—a chronic ulcer, persistent for many years and irritated night and day by acid gastric juice.

### POST-OPERATIVE COMPLICATIONS

The surgical treatment of duodenal ulcer is so systematized, so common, and so successful, that a consideration of the complications of the disease without including those attaching to its operative treatment would be incomplete. There is probably no other chronic disease in which there is such complete unanimity as to the best form of operative treatment. Posterior gastroenterostomy holds the field against all rival methods, and is one of the most successful operations of surgery, but like every other operation, it carries a definite though small risk, and every surgeon who has many of these cases is certain sooner or later to meet one or other of the following unpleasant complications.

*Post-operative Hæmorrhage*—This may come either from the ulcer or from the suture line. There is no means of telling which, and it is wiser to be on the safe



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The chronic complications embrace a rather heterogeneous group of conditions, among which the following are the most interesting and important:

*Multiplicity of Ulcers.*—The occasional occurrence of more than one duodenal ulcer in the same patient is not so striking as the undoubted fact that in the vast majority of cases the ulcer is single. Why should it be solitary? Why, moreover, should its usual situation be the anterior surface of the first part of the duodenum? It is suggested that this is the point where the acid gastric juice impinges when ejected from the stomach, but it is difficult to believe that the aim of the pylorus can be so true. The presence of a co-existing gastric ulcer is a well-established complication which is no doubt sometimes overlooked, particularly when situated high up on the lesser curvature. It is an important point to have in mind as a possible cause of persistence of symptoms after gastro-enterostomy.

*Peri-duodenitis and Adhesions.*—It has already been indicated that one of the causes of adhesions round the first part of the duodenum may be the spontaneous healing by inflammatory exudate of a pin-hole perforation. It is not suggested that this is the cause in all those cases where the duodenum is firmly fixed to the liver or to the gall bladder. A marked degree of peri-duodenitis may no doubt result from the escape of organisms through the base of an ulcer which has never perforated, and conversely, inflammatory conditions of the gall bladder or bile ducts may spread to the duodenum and fix the two together by plastic exudate.

*Deformity.*—All ulcers tend to heal, and in doing so they produce scar tissue, but ulcers of the duodenum probably produce less than any other similar lesion. There is no comparison between the dense cartilaginous base of a gastric ulcer and the usual thin, papery floor

## DUODENAL ULCER

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*Failure to Relieve Symptoms* after an apparently successful operation should at once suggest that the opening is not functioning, or that the disease was not in fact duodenal ulcer, or at any rate, not solely that, and further investigation of the case should be instituted. The possibility of overlooking a co-existing gastric ulcer has already been referred to. The conjunction of the two is certainly not particularly rare, for I met with it in two consecutive cases a few months ago.

### EARLY DIAGNOSIS.

In duodenal ulcer, as in all else, prevention is better than cure, and most of the complications may be forestalled by successful treatment of the ulcer in its early stages. For this early diagnosis is essential, and there can be no question that in the vast majority of cases there is great delay. It is not a question of weeks or months, but of years, before a definite diagnosis is arrived at and specific treatment instituted. Whether that treatment should be surgical or medical is still a subject of debate, and powerful arguments can be adduced in favour of either method, but broadly speaking, it may be said that the choice really depends upon economic questions. Non-operative methods involve an exacting and prolonged period of rest and treatment, which may be highly successful for a time, but are often followed by relapse and the necessity for a further course of treatment. This is well enough for the leisured classes, but those who are dependent upon their own exertions cannot afford the time consumed by medical treatment, nor can they face the possibility, indeed, the probability, of further periods of illness resulting from relapse. Such patients will choose to take the slight risk of operation and the much higher probability of complete and permanent relief from their symptoms.

side and regard it as the result of an error of technique, and act accordingly. The abdomen should be re-opened without delay, the patient transfused, the anterior surface of the stomach incised, and that part of the posterior surface carrying the stoma everted through the incision. If no definite point of bleeding can be discovered, a complete circle of sutures should be inserted round the margin of the stoma, and the ulcer itself should also be under-run with stout catgut in case the bleeding is from this source.

*Vicious Circle.*—The regurgitant vomiting that results from the establishment of a vicious circle is one of the most anxious and perplexing of all post-operative complications. The difficulty in dealing with it arises from the fact that it is sometimes only a temporary condition, which time will cure, but if we wait too long the patient may die before the normal passage is re-established. It may result from several causes: the loop may be definitely and permanently kinked because it is too long, or too short—and it is obvious that in these cases nothing short of further operation will be of any use, or there may be a temporary blockage due to over-distension and folding of the loop of bowel, or a vein may be pricked during the suturing with the result that a hæmatoma is produced, which may be large enough to block the jejunum at its point of attachment to the stomach.

My first experience of this complication of gastro-enterostomy was in a feeble old lady over sixty years of age, whose general condition had led me to rather hurry the operation. She began to vomit copiously the day afterwards, and in view of her condition I dared not wait, but felt obliged to re-open the abdomen at once. I found that the loop was too short, and was tightly kinked, but fortunately an anastomosis between the afferent and efferent loops was effected with complete success.

Shortly afterwards I had another case of a different type. A young, strong patient, who retained her strength well in spite of persistent vomiting. I waited a day, and yet another, trying in the meantime the effect of alterations of posture. We finally turned the patient on her face, and the vomiting ceased at once. The fact that

## DUODENAL ULCER

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# The Surgical Significance of Albuminuria.

By JAS B MACALPINE, FRCS

*Hon Surgeon and Surgeon in charge of the Urological Department,  
Salford Royal Hospital*

ALL albuminurias of surgical interest, apart from febrile albuminuria and the Bence Jones variety, have their origin in disease which is primary in the urinary tract itself, and practically all such surgical lesions can, and will, determine the presence of albumin in the urine. The ætiology of the protein and therefore its significance is much more varied than that of the albuminurias seen by the physician. It may be added to the urine, not only by every lesion of the tract, but also at any point from the glomerulus to the exterior, and its source of origin must be ascertained.

It is obvious that the significance of the albumin in these circumstances is decided by the causative lesion rather than by the simple presence of protein in the urine. It is impossible for me, in the space at my disposal, to consider all these conditions separately. I propose, therefore, to discuss first of all, the differentiation of false and true albuminuria, and subsequently to group albuminurias into two main classes, according as they have their causation in the lower or upper urinary tract.

## FALSE ALBUMINURIA.

Surgical albuminuria, as I have said, may be true or false. False albuminuria, also variously termed spurious or accidental, occurs when albuminous fluids are added to the urine. These are pus, blood, and genital secretions. As the latter, the genital secretions, can invariably be excluded by catheterization, they will

receive no further comment. The former, i.e. pus and blood, demand much care if a sound estimate is to be arrived at concerning their significance

When urine contains either of them it is generally important to ascertain whether the albumin which is present is solely due thereto. Chemistry helps us very little, for the protein in all cases is derived from the blood. It consists of serum albumin and serum globulin in varying proportions. The relation of these two substances and their significance is imperfectly understood, but the estimation of the percentage of globulin occurring in nephritis, which for some time was in vogue as an aid to prognosis, has been discarded as being too uncertain, though the persistent presence of much globulin in the urine is still, I believe, regarded as a bad prognostic feature

Perhaps the most valuable information of all is that obtainable from a reliable practitioner who has known the patient for some time and is able to say positively that up to a certain date there was, or was not, albumin in the urine. Such a statement is of the greatest possible value when dealing with an albuminuria, which is partly, and may be wholly, due to blood or pus. Similar information may occasionally be obtained when a patient has recently been examined for life insurance.

*Hæmaturia.*—In locating hæmaturia, the first thing is to notice its relation to the urine, whether it occurs before or with the water, or is terminal.

Arising in the lower urinary tract it is traceable by cystoscopy. Arising *copiously* in the upper tract it may be located by ureteric meatoscopy. Its existence, when not attributable to nephritis, is a call for immediate cystoscopy in order that its anatomical origin, and when possible, its pathological cause, may be established. A successful result is much more likely to be achieved in the presence of active hæmorrhage than if one awaits its subsidence. Inspection cystoscopy failing, the

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comparing the result with the amount of albumin that is present. When the quotient is below 1·40,000 the albumin is probably due to pus alone; when it is above 1·7,000, it is probably chiefly renal. As far as I know, however, this method is not in general use. Purulent urine, which is to be examined quantitatively for albumin in this way, should be fresh, as by the action of bacteria some of the albumin may be converted into albumose (Dixon Mann)

### TRUE ALBUMINURIA

1 *Caused by Obstruction of the Lower Urinary Tract.*—What I have to say about albuminuria following lower urinary obstruction is common to all forms of obstruction, whether arising from stricture, prostatic hypertrophy, or fibroids, etc., but as its effects are most often seen, and most important in prostatic disease, I will, for the sake of brevity, confine my remarks thereto, and it can serve as typical of other obstructions.

Albuminuria in prostatic disease may be true, false, or mixed. A mixed origin for protein is very common in urology. Occasionally one may have it arising from as many as three or four separate sources. Any surgical disease of the urinary tract may, of course, occur in a patient who was previously the subject of some form of Bright's disease, and chronic nephritis is an especially frequent concomitant in old men with prostatic trouble, its origin generally anticipating and being independent of the prostatic disease, so that in one patient we frequently find associated what may be called medical and surgical albuminuria, to which again may be superadded accidental or false albuminuria, resulting from the addition of pus, blood, or both.

When we get prostatitis whose urine contains no accidental albumin, any protein found must represent a true albuminuria. In such cases we must differentiate carefully between that albuminuria which is obstructive



ureteric catheter must be resorted to, but it should be remembered that following this operation traumatic blood may be found in the catheter specimen, even when the manœuvre has been skilfully performed.

The question whether albuminuria is entirely due to hæmorrhage may sometimes be settled by putting the patient to bed and obtaining cessation of hæmorrhage. The persistence of albumin during the intermission would be significant, especially if accompanied by casts. When a patient is under supervision for this purpose, every specimen of urine must be inspected by a responsible person, lest a favourable opportunity for examination be missed. It should be noted, however, that where a cystoscopic examination is contemplated this should precede any attempt to obtain abeyance of the hæmorrhage. In cases of renal origin albumin is generally in excess of what might be expected to be present, judging by the degree of admixture of blood. Newman says that, if on estimation the proportion of albumin to hæmoglobin prove to be more than 1·6 to 1, this points to a renal affection as the cause of the hæmaturia.

*Pyuria.*—The origin of pyuria is differentiated in several ways, including the two glass tests and the cystoscope, whilst a very important method is that of ureteric catheterization. Pyuria does not suddenly cease, as does hæmaturia, and offer the chance of examining for albumin in its absence. Even if a kidney becomes temporarily blocked, there is invariably some secondary vesical infection which will vitiate the test.

Pus arising from lower urinary inflammation gives less albumin on testing than that derived from the kidney, so that when a urine shows a large amount of albumin this latter is probably of renal origin. In 1897 Lint made the attempt to establish an albumin-pus quotient by counting the leucocytes in purulent urine with the aid of a Thoma-Zeiss hæmocytometer, and

## SURGICAL ALBUMINURIA

some cases of as much as 120 ounces or more. This again may be a prelude to a sudden suppression, for it is a remarkable and often dramatic fact in urinary surgery that the copious polyuria of aseptic nephritis is the state which is closest to complete suppression. What accounts for this abundant secretion? Its cause is probably the diuretic effect of a high head of blood urea which has accumulated behind the obstructed kidney, and which now finds an exit. The rapid fall in blood urea within a few days of decompression, which has become demonstrable by recent laboratory methods and which forms so valuable a guide to our operative procedures, is evidence of the nature of the polyuria.

If the patient rallies from the effects of the withdrawal of urine, it is usually found that the proteinuria too shows signs of improvement within a few days, and clears rapidly.

That this albuminuria is partly, or wholly, due to a "release hyperæmia" following, as I have said, a pressure ischæmia, is proved by its comparative or complete absence if the urine is withdrawn slowly, and the kidney is therefore gradually decompressed.

A great many of these cases are catheterized somewhat lightheartedly, either in the doctor's surgery, or in the casualty ward of the hospital, and are sent home, with the result that the copiousness of albuminuria escapes observation. These patients should be regarded as seriously ill, apart altogether from their temporary obstruction, and should invariably be admitted to the wards as "urgencies."

Whether these retentions leave a permanent defect in the kidney I will not discuss. It is probable that they do so, and in any case they are commonly followed by renal suppuration, which never completely subsides. But in any case the albuminuria tends to disappear in the first few days, and the significance of any residual protein requires estimation. On the question of whether

in origin and that which is an actual nephritis. The former behaves clinically as one would expect it to do if due to compression of the kidney—compression between the pelvis and the capsule, and perhaps compression by the actual fluid in the tubules themselves, as shown by Allard. The incubus will fall upon the renal cells themselves and, as is invariably the case, will be most effective in crushing the large columnar cells of the tubules. It will also fall on the vessels and there will be a resultant pressure ischæmia. It is this pressure ischæmia whose management is so important in the handling of these cases. Sudden release is the most dangerous thing which can befall these patients. The pressure ischæmia gives place on release to engorgement, and this will be evidenced by albuminuria, hæmaturia, or suppression, according to its severity, and is liable to show itself additionally by a greater or less degree of uræmia. Of these manifestations I am only concerned at present with the albuminuria. The more acute and prolonged the retention in the period preceding the release, the greater will be the quantity of albumin. The tensor the bladder, as felt in the hypogastrium, the more marked is the effect on the kidney of release. My impression, too, is that the younger the patient, the more he will suffer from albuminuria. Older patients suffer from uræmia, but the younger ones from albuminuria. In this, perhaps, one may see a parallel with orthostatic albuminuria which, according to Pavy and Helmholtz, is due to a circulatory change and disappears with age. Possibly diminished elasticity of the blood vessels, assisted by renal sclerosis, which occurs with increasing age, accounts for the diminished liability to albuminuria. This albuminuria, contrary to copious albuminuria when seen in the medical wards, where it is usually accompanied by oliguria, is associated with an abundant polyuria in the first twenty-four or forty-eight hours, amounting to a daily excretion in

patient within a comparatively short time. This, however, I believe does not apply to the retinitis of pregnancy, and apparently it does not apply to that of prostatic disease. My patient was left with permanently damaged vision, which is likely to be observed in the retinitis of pregnancy. I cannot recall having seen another case of albuminuric retinitis due to prostatic obstruction.

It would appear, therefore, that the occurrence of either of these conditions is evidence of serious renal disease additional to that caused by lower urinary obstruction. The importance of recognizing a medical nephritis, as evidenced by cardio-vascular and retinal change and urinary casts, lies in the fact that these cases clear much more slowly on preliminary treatment and present a less favourable operative risk.

2. *Caused by Disease of the Upper Urinary Tract.*—I come now to the subject of renal disease, and here again we find that albuminuria is frequently of mixed origin. Interference with the parenchyma or with the vascular supply of the organ, by whatever disease it is caused, usually accounts for a certain amount. If the lesion is a pyogenic or hæmorrhagic one, accidental albumin is added, whilst in the case of *serious* unilateral disease, it is well known that a low grade of inflammatory change occurs in the neighbouring gland, determining albuminuria from the second kidney. This change, which is most characteristically seen in renal stone and tuberculosis, is at first a subacute nephritis, whilst later there is an actual extension of the original disease to the second organ.

The importance of disease in the second organ does not require emphasis, especially when nephrectomy is contemplated. It is generally easy to discover the propagation of the *original* disease to the neighbouring gland, in the case of lithiasis by the X-ray, and in the case of tuberculosis by ureteric catheterization; but

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it is a legacy from the period of retention, or is of cardio-vascular or of long-standing nephritic origin, an examination of the urinary tract and of the urine will refuse to yield evidence, save that, as pointed out by Thomson-Walker in his book on renal function, the interstitial nephritis of back-pressure is not associated with cast formation. Information must be sought in collaboration with a physician, who will estimate cardio-vascular and retinal changes. In many of my more difficult prostatic cases I have had the patient examined by Dr. Langley. Space forbids me to enter at any length into the results of such examinations, but two important points invite comment. The first is, that prostatic obstruction does not produce vascular hypertension; the effect appears to be rather in the opposite direction. This is a curious observation, seeing that the morbid anatomy of the two conditions is very similar. The second is, that never has retinal change been discovered in cases examined prior to operation, apart from coincident and aetiologically unrelated nephritis.

In one case, however, a patient in whom a first-stage operation had been performed developed severe intestinal hæmorrhage, and also unilateral blindness on the tenth day. He was seen by Dr. Wharton, who stated that the blindness was undoubtedly nephritic in origin. This patient made a complete recovery from his immediate symptoms, was allowed a period of four months' drainage prior to his second stage, and is still alive and well six years after his prostatectomy. The case is worthy of record because physicians tell me that the gravity of albuminuric retinitis in its bearing on prognosis cannot be overstated, and that a patient seldom survives more than two years.

It is said that on one occasion the late Marcus Gunn wished to follow up a series of cases of albuminuric retinitis in which he had been interested, but found, on making inquiry, that all the patients were dead. Such an experience gives support to the commonly accepted opinion, that the onset of albuminuric retinitis in the course of renal cirrhosis means a death sentence to the

## SURGICAL ALBUMINURIA

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# The Treatment of Children Recovering from Acute Cardiac Affections.

By LESLIE THORNE THORNE, M.D

*Late Medical Examiner, Technical Education Board, London  
County Council, etc*

THE problem of the treatment of children recovering from acute cardiac affections has of late aroused great interest, both in the medical and teaching professions; and for some time past the Invalid Children's Aid Association has devoted two homes, one for boys at Willesden, and the other for girls at Hartfield, in Sussex, to the after-treatment of such cases. The average length of stay in the homes is five months, but some are kept a year.

The importance of the proper treatment of such cases, both as regards the individual and the nation, cannot be exaggerated, for if neglected they are almost sure to become chronic invalids, with nothing but a useless life of suffering to look forward to, whereas, if they are properly treated in childhood, they usually grow up to become useful citizens, and to enjoy healthy, normal lives.

As an illustration of the great importance to the nation, as distinct from the individual sufferer, of the proper after-treatment of such cases, Dr R. A. Atkins<sup>1</sup> states that, in 1923, 56,886 people were registered as having died of heart disease in England and Wales, and that we were losing 18,962 lives per annum from acute cardiac affections commencing between the ages of five and fifteen years.

The object of this short article is to illustrate the



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*sympathetic nephritis* is a phenomenon for which, particularly in these two diseases, one must be ever on the watch. It is not easy to detect. The resulting albuminuria is slight in quantity, and is quite obscured in the welter of pyuria and albuminuria from other sources. Its effects are not separately discernible in the general health of the patient. The test by chromocystoscopy is not reliable, for the dye in subacute nephritis is variable in its time of appearance and tends to be early rather than late, thus giving the impression of a kidney in full health. Finally, ureteric catheterization, which is probably the most reliable, is open to the fallacy that traumatic blood may invalidate conclusions. It will thus be seen that the presence of a slight albuminuria from the second kidney in these cases of primary unilateral renal disease is difficult to detect, even though it is of great importance. Where nephrectomy is proposed in tubercle or advanced lithiasis, the case must be reviewed with scrupulous care. One of my cases of renal tuberculosis, who had good renal function tests, and appeared an excellent subject for nephrectomy, succumbed to uræmia in about eighteen days, the remaining organ, which was hypertrophied, showing evidences of nephritis, *post mortem*.

Thus in both of these examples of surgical urinary disease, and in many others of which they serve as types, we have proteïn occurring in the urine, which must be accounted for by a number of different lesions, and the part played by each severally must be carefully assessed, and especially its probable influence on the line of treatment which is proposed. While a complete and absolute differentiation is generally impossible, the reaction of the supposed healthy kidney to intervention can generally be forecasted by the various methods now at our disposal, so that catastrophes are uncommon.

## CARDIAC AFFECTIONS

part of the routine of medical examination, and a medical man who does not constantly practise cardiac percussion may lose the art of percussing out the cardiac area accurately.

Dr. F J Poynton<sup>1</sup> says that it is very easy to overlook the first early dilatation of the heart in such cases, and yet it may be the key of the situation. He also states that rheumatic dilatation of the heart always accompanies pericarditis and endocarditis, and that it may also occur without pericarditis or endocarditis. He is convinced that percussion of the deep cardiac dullness in childhood is a remarkably accurate method of investigation, and that students only require careful instruction to acquire this accuracy.

There is a certain school of cardiologists who rather discourage the practice of cardiac percussion, relying entirely upon the electrocardiograph to demonstrate the presence of degeneration in the cardiac muscle, this is most unwise, because marked cardiac dilatation is often found when the electrocardiograph gives no indication of muscle degeneration. I am very strongly of the opinion that degeneration of the cardiac muscle is only shown on the electrocardiograph when it is well established and advanced, and that its early stages cannot be diagnosed by this instrument, so accurate and complete a diagnosis of the condition of the myocardium as it is possible to make with our present knowledge, will not be obtained if the electrocardiograph is entirely relied upon to demonstrate it, to the exclusion of other methods of clinical investigation. The importance of deep cardiac percussion cannot be over-rated.

The "Nauheim" treatment, when given to children suffering from the after-effects of heart affections, such as endocarditis and myocarditis, has, in my experience, very materially shortened the period of rest that is necessary in these cases, and has, moreover, restored

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great benefit of the "Nauheim" treatment, in combination with more or less rest, in the treatment of children suffering from the effects of acute or subacute cardiac affections, whether they were caused primarily by rheumatic infection, or by some other disease, such as influenza, measles, scarlet fever, malaria, or enteric. One other not uncommon cause of dilated heart in children is the long strain the heart is subject to in a severe case of whooping-cough. In cases where the heart is perfectly healthy this is not likely to occur, but in children with a rheumatic family history, who have suffered from "growing-pains" or tonsillitis, it is often found. There is no doubt that, in these cases, the myocardium has been weakened by rheumatic infection, and has therefore easily given way under the unwonted strain of constant severe coughing spasms.

The weakened and dilated heart found in children who have suffered from a subacute or chronic myocarditis, without endocarditis or pericarditis, is often of so insidious a form that it does not give rise to any more marked symptoms than a general lassitude, a more or less rapid pulse, and some shortness of breath on exertion. These symptoms are often ascribed to the anæmia which always accompanies such a condition. The child is treated with iron, maltine, or other tonics, and is encouraged to play games and take exercise. Such treatment, in these circumstances, tends to aggravate the cardiac condition and the symptoms, rather than to cure them.

The presence of slight cardiac dilatation, which is often the only physical sign of a weakened myocardium, is indicated by an increase in the area of deep cardiac dullness, due to the stretching of the heart muscle, weakened by myocarditis. This increased area of cardiac dullness can easily be overlooked unless careful percussion is carried out upon all children as

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some to health, vigour, and the ability to lead an active, useful life, who, without this treatment, would undoubtedly have been condemned to lead an invalid existence, or, at the best, a much curtailed and broken life.

Although absolute rest in bed is essential in the early stages of the treatment, there comes a time when the benefit which can be derived from this absolute rest has been obtained, and if the patient is kept entirely in bed after this period, more harm than good is done; the case comes to a standstill, and chronic invalidism is established. The history of Case No. 1 well illustrates this point, as this patient was at a standstill for some time before she came up to town for treatment, and began to improve steadily from the time she began a course of baths.

The following two examples of cases treated by the "Nauheim" methods illustrate the great benefit derived. They are typical cases, and their progress from childhood to womanhood has been followed, so that the fact that they are both able to lead useful, hard-working lives of the ordinary professional class has been proved by time. From the history of these cases it will be seen that before they were treated they were well on their way to invalidism, and would have certainly been a burden to themselves and their relatives if the ordinary treatment by rest and tonics had been adhered to.

*Case 1*—A little girl, aged seven years, whom I first saw in September 1911. She had had scarlet fever two years previously, and rheumatic fever early in August 1911. Since that date she had been confined to bed, and still had some muscular pains, and a temperature ranging between 99° F and 100° F at night. She had been seen by a physician a few days previously, and he had said that she would probably never be able to walk again, on account of the condition of her heart. It was, in fact, because of this grave prognosis that I was asked to see her. Her mother informed me that the patient's grandmothers on both sides of the family had had rheumatic fever and valvular disease. She was exceedingly thin, her cheeks were flushed, and her lips

cyanosed Her pulse rate was 104 to the minute, regular in time, and very small in volume The blood-pressure was 55/100 mm Hg The heart-sounds were very feeble, and a faint systolic murmur was heard at the apex The area of cardiac dullness was somewhat enlarged, extending from the nipple line to the centre of the sternum, and measuring three inches across at the nipple level She suffered from marked dyspnoea when she sat up in bed Her sleep was very broken, her appetite bad, and she suffered from severe constipation At this time she was quite unfit to move I prescribed  $2\frac{1}{2}$  grs of aspirin at night, and  $1/600$  of a grain of Nativelle's digitalin once daily, and the necessary treatment for the bowels I saw her again on November 19, just eight weeks after the first consultation Her condition was much improved Her colour was better, there was no night fever The rheumatic pains were no longer present, and the constipation was less The heart-sounds were decidedly stronger, and the systolic mitral murmur was louder, and could be heard all over the cardiac area The pulse was of the same rate as on the previous occasion, but it was of better volume The area of cardiac dullness was unaltered, and the apex-beat was a quarter of an inch outside the nipple line She was still confined to her bed We decided that she should wait a few weeks longer before trying the journey to London for treatment, but as her condition remained at a standstill, and she had not improved any further by January 1, 1912, she was brought up to London from Northamptonshire, where she lived She was carried to and from the train, and bore the journey to a London nursing-home fairly well, except for great fatigue I started a course of "Nauheim" baths on January 3, and gave eighteen baths in the course of four weeks After four baths she said she felt much better, and had lost her headache, which had been almost constantly present for some months She walked across the room for the first time on January 8, and was able to do it without any dyspnoea From this date she rapidly improved The pulse dropped to 88 per minute, without drugs of any kind being given, and the area of cardiac dullness steadily decreased till, on January 28, it was normal, extending from one inch inside the nipple line, to the left border of the sternum, and measuring two inches across at the nipple-level, one inch less than before treatment The systolic murmur was localized around the apex, and she went out for several short walks On January 28 she returned home with her mother, who had been with her in London On May 27 I went down to see her. She had progressed rapidly, was in excellent health, had put on a good deal of weight, and could run about without getting tired, in fact, when I arrived at her home she was up a tree which she had climbed The pulse was 84, and of good volume, the cardiac dullness was normal, the systolic apex murmur was only just audible, she had had no headaches, constipation, or indigestion, and no return of the rheumatism Just a year later her mother wrote to me saying, "she was awfully fit and strong and could do anything"

On December 30, 1925, I heard from her mother again The patient is now twenty-one years of age, and is in wonderfully good

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## CARDIAC AFFECTIONS

matic myocarditis and endocarditis, and the other from the same affections, of an influenzal origin, were restored to health and useful lives, the first case having been at a standstill for some time before treatment, and the second getting steadily worse. The increase of cardiac dullness extending to the right of the sternum, so marked a feature of Case 2, is evidence of very dilated and weakened auricles, and in any case where the area of absolute cardiac dullness extends to the right of the left border of the sternum, it may be taken for a certainty that the heart is dilated, and that treatment of the cardiac condition is necessary. The prescription of tonics, and the advice to take exercise in the fresh air, will not be of any avail under these circumstances.

### CONCLUSION.

In cases of dilated hearts in children, the sequelæ of myocarditis, endocarditis, or pericarditis, resulting from rheumatic or other infection, a course of "Nauheim" baths will restore the patient to health much more rapidly, certainly, and surely, than any other form of treatment.

### Reference.

<sup>1</sup> Discussion on Rheumatic Infection in Childhood, *B.M.J.*, October 31, 1925



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health. She went to school for several years and played all the games. She is working as a secretary, and plays tennis, dances, and enjoys life. Her heart has been examined from time to time, and the report has always been satisfactory. A very slight murmur is still heard at the apex.

The second case is that of an older child, whose cardiac condition was due to influenza following whooping-cough at a period when she was growing very rapidly.

*Case 2*—A girl, aged 15½ years, who had had whooping-cough and influenza some months before I saw her. She became exhausted very quickly, had an irregular cardiac action, palpitation, and dyspnoea on exertion, and a medical man who saw her diagnosed valvular disease. When she first came to me in March, 1913, she was five feet seven in height and very thin. Her hands and feet were cyanosed, and her pulse rate was 94 per minute, and very small in volume. The area of cardiac dullness was greatly enlarged, extending from the left nipple-line to a good inch to the right of the sternum, and measuring five inches across at the nipple-level. The marked extension of the cardiac dullness to the right of the sternum, indicated auricular dilatation. The apex-beat was in the nipple-line, and the impulse was forcible and diffuse. A loud systolic murmur was heard at the apex, and was conveyed into the axilla. She was going from bad to worse, getting more and more of an invalid, and she suffered from severe headaches and constipation. A polygraphic tracing showed a pulse of very small volume, and a markedly lengthened a-c interval. I gave her a course of twenty-five baths extending over five weeks, and she steadily improved throughout. At the end of the treatment she had lost her headaches, and the constipation, dyspnoea, and cyanosis were much better. A polygram showed a pulse of good volume, with an a-c interval which was practically normal. The heart had contracted down well, the apex-beat being an inch and a-half inside the nipple-line, and the area of cardiac dullness extending from 1½ inches inside the nipple-line to the middle of the sternum, and measuring 2½ inches across at the nipple-level. She returned home and went on so well that she was able to go to a boarding-school in the summer term. She wrote to me from there in July 1913, to say that she was better in every way and had very little indigestion and no constipation, and that she did not get out of breath or tire by any means so easily as she used to do.

I saw her in 1914, 1916, and 1917. She was keeping in good health, and cycling, playing tennis and hockey. She took an honours degree at the London University, and was able to follow the profession of a teacher. In 1923 she developed enlargement of the thyroid gland, and had half of it removed. Since then she has been able to lead an ordinary life, and continue her teaching. She is now twenty-eight years of age.

Both the above children, one suffering from rheu-

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inherent and present all through life, or they may be induced by the sudden or gradual alteration associated with the menopause. Arteriosclerosis and general degenerative changes are certainly important. Next, infection must be considered, and while this undoubtedly plays a part, the rôle is not so definite as in certain other types of arthritis, nor is the removal of the source of infection attended with such happy results as are sometimes achieved in the more purely infective types. Strain and trauma are of great importance, and in a large proportion of cases some form of accident to the hip is described. However, too much stress should not be laid on this, for it is natural that the patient should search his memory to account for the pain and stiffness in this particular hip-joint, and perhaps magnify an injury which would otherwise be of little account, nor is it difficult for those who are engaged in laborious occupations, as so many of these patients are, to find some injury, whether in the form of a strain or a blow, in their past history.

The symptoms complained of by patients with hip disease are pain and stiffness. The pain varies considerably, both in intensity and distribution, and is not always confined to, or even located in, the hip-joint. The close connection between the sciatic nerve and the joint and the common origin of the nerve supply of both hip- and knee-joint explain why the pain is not infrequently referred down the course of the sciatic nerve, and sometimes in the knee itself, and not in the hip. It thus comes about that patients will complain of sciatica or trouble in the knee when all the time the lesion is in the hip-joint. Mistakes, however, should not occur if the patient is examined even in a cursory fashion, for it will be found that pain is induced by certain movements of the hip-joint, and not by movements of the knee, independently of the hip, such as

# The Senile Hip.

By R. G. GORDON, M.D., M.R.C.P.

*Physician to the Royal Mineral Water Hospital, Bath*

WHILE osteoarthritis, as a whole, is an all-too-common disease affecting numerous joints in all parts of the body, fully half the cases which come under observation are confined to one or other hip-joint. Pathologically there seems no particular reason why such cases should be separated from more general osteoarthritis, but clinically they make, and in the past have made, a sufficiently definite group to warrant the older physicians describing them under the title of *malum coxae senilis*. Moreover, this seems justifiable inasmuch as the anatomical distribution of the disease makes treatment a very special problem. We are dealing with a weight-bearing joint, which enjoys not only remarkable inherent mobility in virtue of its ball-and-socket character, but also considerable indirect mobility in virtue of its articulation with the movable pelvis.

The condition appears, as a rule, after middle life, and though commonest in the manual workers who are subjected to the greatest strain, it is by no means confined to them. Similarly it is commonest in men, but quite frequently met with in women.

Like all "rheumatic" diseases the pathogenesis is obscure, and in all probability complex, for the efforts to fasten the blame on any one factor have not been successful. In the first place, there is something in that much-abused word "diathesis." Coupled with this, metabolic factors probably play a part, whether in the form of upsets of the endocrine balance or in the form of faults in either the katabolic or anabolic phases of digestion. These abnormalities may be

## THE SENILE HIP

shape of palpable nodules, and although in these joint cases considerable pain, stiffness, and even deformity may result if proper treatment is not employed, the X-ray picture remains negative. It must be confessed, however, that a few cases which have been diagnosed in hospital as periarticular fibrositis owing to the absence of observable bony changes, do return later with a typical picture of osteoarthritic changes. However, if cases are treated early, and it is only in early cases that the mistakes will occur, a case of fibrositis should be improved by deep massage and active and passive manipulation, but if this treatment is not beneficial within a reasonable time, of four to six weeks, grave suspicions should be entertained that the case is more serious than at first supposed, and a close look-out kept for any appearance of bony changes.

With the absorption of bone and the extrusion of osteophytes the protective synovial membrane becomes eroded and the cartilaginous and bony surfaces exposed. These are exquisitely tender, so that great pain is experienced when they are jarred or pressed upon. To prevent this, Nature attempts to provide splinting in the form of muscles held in spasm, and of these the ilio-psoas is most commonly affected. Spasm of this muscle leads to a flexion deformity of the joint, whereby the joint is spared the jarring and pressure induced by the transmission of the body weight when the hip is rigidly extended. This protective effort, however, can only be accomplished at the expense of locomotion, which is greatly hampered by the shortened limb and the compensatory tilting of pelvis and spine. Moreover, these muscular spasms lead to cramps and aching, which in themselves are a constant source of trouble to the patient.

The actual muscles which are thrown into spasm, and the consequent deformities, will depend on the situation of the denuded surfaces on the joint, and the

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can be carried out with the patient lying on his face. In hip-joint disease, rotation in either direction, but especially outwards, and abduction and adduction, especially abduction, are limited and painful while flexion and extension are relatively free. In sciatica, on the other hand, flexion of the hip is painful, but rotation and abduction are free. In the rare cases where pain is referred down the anterior crural nerve, extension of the hip is painful at the point at which the nerve comes to be stretched.

Examination of the hip-joint by the X-rays will confirm the diagnosis of hip-joint disease without any doubt. In the early stages of the trouble a slight roughening of the edge of the acetabulum may be all that is visible, but soon the typical signs of absorption of bone with the compensatory extrusion of osteophytes can be seen. Finally, the joint becomes completely distorted, the neck of the femur absorbed and the head flattened out into a mushroom-like appearance, the acetabulum being more or less correspondingly widened to accommodate it. The evidence points to the process of absorption being primary, and the throwing out of osteophytes the effort of Nature to buttress up the failing strength and stability of the joint.

Clinical and radiographic examination of other joints serves to determine whether general osteoarthritis is present, or whether the case is one of true monoarticular hip-joint disease. It sometimes happens that the clinical signs of arthritis of the hip are present, but the X-ray shows no bony changes whatever. In the majority of cases this indicates a periarthritic fibrositis, a part of a more generalized fibrositis in which the fibrous capsule of the joint is involved in a process resulting in the replacement of healthy supporting fibrous tissue by unhealthy contractile scar tissue. Signs of a similar change in other joints in the fasciæ and in the intramuscular tuberculæ are present in the

## THE SENILE HIP

diaphoresis by hot water or vapour baths is certainly to be recommended. Most of these patients who have retained their teeth will have unhealthy mouths, and in the interests of their general health these should be attended to. However, as has been said, the dramatic results which sometimes follow similar treatment in infective arthritis must not be expected. At the same time, it is certainly worth while to search for and remove all foci of infection in any part of the body.

Locally, we are concerned with a partially ankylosed and, perhaps, deformed joint, which is extremely painful on movement, and which is inefficient as a weight-bearer. It is obvious that if we could permanently fix this joint in the optimum orthopædic position, it would be greatly to the benefit of the patient, especially as one stiff hip does not produce great disability in view of the mobility of the pelvis on the spine and on the other hip. On theoretical grounds it would seem that open operation promises the best means to this end, and in certain selected cases excellent results have been obtained. It must be remembered, however, that this is a major operation, attended with a considerable degree of shock, and most of these fat, elderly patients with none too good arteries are quite incapable of standing it. Recourse must be had, therefore, to less heroic measures. It is clear that once osteophytes have formed, no physiotherapeutic remedies can remove them, and we must direct our efforts to the relief of muscular spasm, the reduction of deformities, and the safeguarding of the joint from the strain of weight-bearing.

When deformity is marked it may be useful to administer an anæsthetic and apply plaster bandages, so as to maintain the limb in the improved posture, and this may have to be repeated a number of times till the desired position can be maintained. It is most important to insist that the anæsthetic should be

particular movements which must be checked or prevented. As in all other forms of arthritis, the relative disuse dependent on the immobility of the joint and the trophic disturbances caused by the inflammatory reactions in and round the joint result in muscular atrophy. The chief incidence of this is in the glutei and muscles of the thigh. This atrophy is distinguished by its distribution from that of sciatic neuritis, in which the distal muscles of the leg are chiefly affected, and from the atrophy of the vastus internus, so characteristic of knee-joint involvement.

Treatment must be directed, in the first place, to the general bodily health, and, secondly, to relieving local symptoms. Most of these patients are elderly, fat, and sluggish, and diet to counteract indigestion and reduce weight is indicated. At the same time it must be remembered that life is too often an almost insupportable burden already, on account of their disability, and they feel that they cannot tolerate the hampering and irritating effects of a rigid diet. It is often possible, however, to persuade them to generally reduce their intake of carbohydrates and adopt one "starvation" day per week with considerable benefit to their health. By a "starvation" day is meant a day on which they go about their usual activities, but keep themselves up by stimulants and not by nutritive foods, so that for twenty-four hours they live on their capital. The stimulants, in the form of tea without sugar or milk, bovril, chicken or meat soup without vegetables, should be given every two hours and, if something more solid is insisted upon, lettuce or a green vegetable *purée* of, say, spinach may be allowed.

Observations show that almost all these cases have a lowered basal metabolic rate, and so the administration of thyroid extract is called for, some cases, indeed, being obviously hypothyroidic. The bowels must be attended to and kept regular, and the promotion of

## THE SENILE HIP

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administered solely for the purpose of relaxing spasm and not for the purpose of forcible manipulation, as it is obvious that any injury to such a joint will only make things worse. If for any reason an anæsthetic is not considered advisable, reduction of these deformities may be obtained by means of a properly applied extension apparatus, but this involves keeping the patient in bed often for a prolonged period, which is by no means always desirable. For the relief of spasm, heat is the agency on which we must rely, and this is best applied by local applications of diathermy or radiant heat to the affected joint, in alternation with hot water or vapour baths. Indeed, in the less severe cases periodic courses of such treatment once or twice a year either at home or at a spa, keep the patient reasonably comfortable, and enable him to follow his profession without great difficulty, if this is not a laborious one.

In order to relieve the joint from the strain of supporting the body weight, the provision of a weight-bearing walking caliper is necessary. It stands to reason that this splint must fit accurately, and really serve the purpose for which it is designed, otherwise it merely becomes an additional encumbrance to an already inefficient limb. Modified from a Thomas's splint, the ring is better moulded like the pelvic support of an artificial leg, so that the patient literally sits in it, all weight being taken from the ischial tuberosity. The side steels should be in alignment with the limb, and fixed in the heel of the boot below the level of the patient's own heel. The slots should be so placed that the foot is slightly everted, and the whole limb slightly externally rotated.

As may be seen from the foregoing, the diagnosis and treatment of the senile hip are largely matters of common sense, but attention to certain details will often relieve the patient of much distress resulting from a malady which is beyond our power to cure.

# The Treatment of Cases of Terminal Cachexia.

By LILLIAS M. JEFFRIES, M.D.

*Surgeon, New Sussex Hospital for Women and Children, Brighton,  
Medical Officer, Roedean School, and Brighton High School*

IT has fallen to my lot, as a general practitioner who undertakes certain branches of surgery, to be called upon to attend some of my own as well as other surgeon's cases of malignant disease right through the long, dark days of their slow death, after the supervention of metastases and the consequent gradual and pitiful destruction of the subject's powers. So long as radical treatment of the original growth is possible, the surgeon can find plenty of guidance, if he needs it, for the later stages, which cry aloud for alleviation of the distress they cause, I have found no help in compendious form. Hence the following attempt to set down points that in my experience have proved of practical value. They are submitted with full consciousness of their defects, and chiefly with the hope that further information may be forthcoming—for example, on the special difficulties in particular forms of new growth. I refer here only to cases in which the resources of surgery and irradiation are exhausted, and in which nothing remains but to mitigate symptoms as they arise and make the closing months of life as little distressing as possible.

## GENERAL MANAGEMENT.

At the beginning of this stage, at least one responsible relative must be made to understand that the patient's condition will inevitably deteriorate. A rough guess can often be given and is very useful as to the length

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## TERMINAL CACHEXIA

own plans for the relief of his own weakness. He may then be pleased with the idea of a bath-chair that enables him to reach, say, his favourite library. Often it is necessary to propose such steps oneself, especially to a self-denying, self-conscious, or unimaginative patient. Long motor drives are sometimes conducive to sleep and appetite, if they can be taken in comfort

When the point is reached at which recovery from exertion is inadequate, one finds the patient content to remain in the house, later in one room. He gets up late, rests after lunch, is tucked into bed early. When bedclothes begin to feel heavy, a cradle is provided. Up to this time, exercise in walking about the room is to be urged, in order to encourage cutaneous and other circulation, though in a case of advanced anasarca or compression paraplegia this is not feasible.

When the patient becomes confined to bed the value of thoughtful nurses is inestimable. It is from such that I have collected many of the hints I am detailing. Nevertheless, one realizes again and again the importance of inquiring into and being prepared with directions about details in the nursing and diet of patients in the asthenic stage.

A suitable bed for nursing should be marked down early, and the patient manoeuvred into it. It adds enormously to the nurse's fatigue to have to lift the patient lying in a wide or double bed.

With a soft mattress, especially a feather one, of course no rings or bedpans can be put in or out either comfortably or cleanly. A patient becomes attached to his own old bed, and if the change be not made in good time, it may end in no one having the heart to insist upon it when its advantages have become apparent. I might mention the value also of foresight in choosing a suitable bedroom, where possible with conveniences at hand for throwing away soiled

## THE PRACTITIONER

of time for which arrangements will have to be made and kept going. Obviously the type and situation of the growth have to be considered, but the best single guide in prognosis is the pulse; if the cardiac muscle is sound at the commencement, somatic life will continue to the extreme of cachexia. The possibility of a rapid close through embolism, severe hæmorrhage, and hypostatic pneumonia, must be explained. The relatives will demand that pain shall be relieved. This can be promised, but the effects of analgesics should be made clear—dry mouth and skin, flatulence, loss of appetite, constipation; and due warning should be given that the inevitable weakness as it supervenes is, in fact, more trying to the patient and more difficult to relieve than the actual pain. The patient must never know that he is fighting a losing battle. Incidentally, nothing is more surprising than the way in which such cases deceive themselves. If they do it deliberately, they are to be strongly backed up. I think of one patient who for thirteen years succeeded in believing herself well in spite of primary and secondary mammary growths. Nevertheless, to lie directly is a mistake in tactics and failure in sympathy. One can nearly always point to improvement in some recent symptom, or relief given by some new drug, or article of diet, or parry one direct question with another. It is often a solace to the patient later, if he knows that his affairs are in order and his will clear. It is well to secure this while one can truthfully say that there is no immediate danger, and before the effort at concentration and expression become severe. I always encourage the patient to lead as nearly as possible a normal life for as long as strength permits. If the exertion shorten the remains of life, it would not be a life that the patient could enjoy. On the contrary, however, any distraction is probably beneficial through the nervous system. I like to give the patient the interest of developing his

## TERMINAL CACHEXIA

invasion of the liver has crippled the patient's digestion.

Milk : Give hot or cold, salted or sweetened, plain or diluted with barley water or soda water, or flavoured with a few drops of strong coffee or fresh tea. As junket, with or without cream, sweetened with sugar or vanilla, flavoured with grated nutmeg, or coffee or chocolate, or salted.

Cheese can be of various kinds, cream cheese, or a spiced cheese—for example, Parmesan or Camembert. Varieties of biscuits, from plain water biscuits to "dinner toasts," and, for a time, biscuits made with a cheese flavouring are liked. A little cheese helps down a good deal of butter, toast, or biscuit.

Milk is, of course, largely given with patent foods. I try a number of these, so that the patient can find his own favourite and reliance can be placed on that, but it is as well to see that he gets other foods once or twice during the day, in order that the favourite may not pall, and so fail at the end. Groats are often forgotten though many patients like them. Pancreatized lentil flour is a good variant for Benger's. Bread and milk can be made in various ways, with or without crusts, with large pieces of bread or smooth almost like bread sauce, boiling milk poured over dry bread or the two boiled together, with sugar or salt. Sometimes a slightly crisp cereal food is preferred. A useful way of getting milk taken is as a broth. Beef extracts are delicious given with hot milk, or partly milk and partly water if too rich.

A raw egg beaten up with milk is of such value as food that one urges its use for as long as possible, and varies the flavouring, from salt to sweet, with one of the sweet essences, with added barley water or soda water, and brandy or sherry.

Eggs are generally best given thus : a few patients can swallow raw, fresh eggs whole; a little salt on the tongue first is generally liked, and sometimes a few

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dressings, etc., and in which deodorants may be kept.

### FOR THE AVOIDANCE OF BEDSORES.

The nurse sometimes needs to be told to order surgical spirit, and not to use that coloured with pyridine. Some skins seem to do better with emollients; I have found nothing more successful than the old ointment of zinc oxide and ol. ric. Rubber rings must be of the right size and blown up neither too full nor too slack. A rubber bedpan can be substituted as soon as incontinence supervenes. Rings made of tow covered with cheap butter muslin, which can be burnt after use, sometimes work better than rubber rings for the protection of the sacral area from pressure and excretions. Soft pads or little cushions made of wool and muslin, placed between the knees and internal malleoli, or bound lightly to the elbows and heels, prevent pressure gangrene at these points, especially when there is constant œdema or extreme emaciation. Boots made of gamgee tissue are sometimes more comfortable than knitted bedsocks.

Unskilled attendants need to be warned both about the danger of burns from hot water bottles, and also the necessity of always keeping the bed warm enough by refilling the bottles.

### DIET.

The question most often asked soon becomes, "What can I eat?" The attendants and the patient sink into despair in search of food that will be digestible, palatable, and varied. It is hardly possible to classify varieties of diet in a way that would apply to all cases. The following is not much more than a list. In practice I deal out suggestions one by one in order that there may be enough to keep up the patient's hopes to the end. I assume here that ordinary invalid menus can no longer be faced, and am thinking chiefly of the time when the

## TERMINAL CACHEXIA

invasion of the liver has crippled the patient's digestion.

Milk : Give hot or cold, salted or sweetened, plain or diluted with barley water or soda water, or flavoured with a few drops of strong coffee or fresh tea. As junket, with or without cream, sweetened with sugar or vanilla, flavoured with grated nutmeg, or coffee or chocolate, or salted.

Cheese can be of various kinds, cream cheese, or a spiced cheese—for example, Parmesan or Camembert. Varieties of biscuits, from plain water biscuits to "dinner toasts," and, for a time, biscuits made with a cheese flavouring are liked. A little cheese helps down a good deal of butter, toast, or biscuit.

Milk is, of course, largely given with patent foods. I try a number of these, so that the patient can find his own favourite and reliance can be placed on that, but it is as well to see that he gets other foods once or twice during the day, in order that the favourite may not pall, and so fail at the end. Groats are often forgotten though many patients like them. Pancreatized lentil flour is a good variant for Benger's. Bread and milk can be made in various ways, with or without crusts, with large pieces of bread or smooth almost like bread sauce, boiling milk poured over dry bread or the two boiled together, with sugar or salt. Sometimes a slightly crisp cereal food is preferred. A useful way of getting milk taken is as a broth. Beef extracts are delicious given with hot milk, or partly milk and partly water if too rich.

A raw egg beaten up with milk is of such value as food that one urges its use for as long as possible, and varies the flavouring, from salt to sweet, with one of the sweet essences, with added barley water or soda water, and brandy or sherry.

Eggs are generally best given thus. a few patients can swallow raw, fresh eggs whole; a little salt on the tongue first is generally liked, and sometimes a few



## THE PRACTITIONER

drops of brandy on the surface of the egg which is taken from a small glass or cup. One does need to warn unskilled attendants against fried eggs and the solid albumen of poached or hard-boiled eggs. Omelettes are seldom well made, nor are they well borne for long; but they can be tempting if savoury. The usual baked or boiled custard can be varied in the same way as junkets.

As long as sweet food is liked, there is no great difficulty. Jellies with fresh fruits embedded may please. Palatable fruit jellies of this sort are to be had from the big stores, also a delicate but slightly sweet punch jelly. When sweet food is refused, home-made or bought calves'-foot jelly or chicken jellies are a change from the well-known ready-made ones.

Bouillon can be made from these jellies, or from a beef extract. Home-made veal broth with rice was enjoyed by one of my patients for weeks.

Savouries are often taken long after sweet food causes nausea. Spread on dry toast or plain biscuit or rusks, a great help is a touch of anchovy or even bloater paste, or Gentleman's Relish which tickles a dulled palate.

In the same way, when grapes and oranges become insipid, grapefruit, fresh pineapple, or peaches are enjoyed, if only a mouthful at a time. Bottled delicacies, such as asparagus, are often a boon.

For a dry mouth, good "acid drops" are often more comforting than pot. chlor. or hydrogen peroxide mouth washes. Slices of lemon or grapefruit sprinkled with salt are particularly useful.

### DRUGS.

Apart from anodynes, the chief difficulty is with carminatives and aperients, as both asthenic and obstructive conditions in the alimentary tract have to be overcome. Massage is seldom applicable, and not for long. |

The attendants must be made to understand the

## TERMINAL CACHEXIA

importance of an unfaltering regulation of the bowels, or they will sooner or later yield to the patient's plea to be let off his dose. Then toxæmia and flatulent dyspepsia will supervene with extra<sup>d</sup> straining in evacuation, perhaps a block due to scybalous fæces; and a more violent and exhausting aperient will be needed to overcome a difficulty that should never have been allowed to arise.

Among the multitude of possible aperients I find the old favourite, senna tea, most universally useful. Flavoured preparations of liquid cascara are especially palatable, or confection of senna; the latter is more apt than the former to cause colicky pains. Liquid paraffin soon becomes useless for these cases, and bulky aperients may cause vomiting. I prefer a comparatively mild aperient and frequent enema to the more drastic cathartics. Phenolphthalein is useful and apt to be forgotten.

Carminatives are nearly always called for and must be varied. After the usual soda and ginger or tinct. cardamom co. in hot water, follow spirit ammon. aromat., succeeded by spirit ætheris in a mixture with sod. bicarb. Mustard leaf to epigastrium or turpentine stupes are homely and useful remedies, leaving pituitary extract for an emergency when cardiac embarrassment threatens. A timely enema, with a small amount of turpentine, may give great relief to flatulent distension.

When vomiting is at all intractable, I do not delay in treating it by starvation. Rectal enemata are generally well tolerated, and nothing but a few sips of water is given by the mouth for at least twenty-four hours. The patient is helped by injections, generally only  $\frac{1}{2}$  grain heroin hydrochlor. A return to regular diet is made gradually by way of albumen water, soda water, weak tea, lemonade, etc., bouillon and milk foods, alcohol has its place.

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## TERMINAL CACHEXIA

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Though irradiation no longer has power to promote healing, it is sometimes still applicable for the relief of pain. Radium emanation tubes can be utilized simply in some cases. A single heavy dose of X-rays is specially beneficial where metastasis in bone is causing pain.

For anasarca, diuretics do help a little. Paracentesis abdominis should not be too long delayed, as it gives immense, though temporary, relief.

The use of alcohol has to be begun at the onset of cachexia, in order to promote appetite and assimilation. I confess to finding a place here for the proprietary "medicated" wines in the case of patients who are unused to wines of any sort. Patients who are accustomed to choose their own wines are best left to do so, except that one aims at a light wine (such as Graves), and a restricted quantity.

When frequent stimulation becomes a necessity, brandy in small, then larger, doses at stated intervals is ordered. Some patients dislike it to the end. It is nearly always best given in milk or bouillon, or along with food. Frequently it reinforces aspirin and gives sleep. Occasionally a patient prefers whisky, a few, in my experience, have been able to retain only champagne. I believe one should give both alcohol and anodynes in whatever quantities the patient requires for the relief of his immediate symptoms. There can be no humanity in limiting either, in the terminal conditions which are under consideration. Have an oxygen cylinder and mask at hand for the relief of dyspnoea due to pulmonary embolism, and amyl nitrite for possible anginal attacks. Stimulate as long as there is any response, but as the flame of life flickers to its extinction do not fail to deaden pain and ease the passing.

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the right course One patient with advanced anasarca vomited practically everything, including soda water, for a fortnight, when one day she ceased to vomit, and on the next "fancied" a ham sandwich. This was given, retained, and assimilated. The incident was over before I heard of it, but the patient was able to take a fair diet for many weeks later.

Such vomiting cannot be reckoned a neurosis, considering the anatomical condition of the subject, but often the patient does digest extraordinary food that he "fancies" One supposes that there has been a specially successful elimination of toxins and that the digestive juices are, for a time, more up to standard.

### THE TREATMENT OF PAIN

I begin with aspirin and insist on its being given in large doses before allowing anything else, as I generally find that it carries the patient through for weeks. In my experience it rarely affects the digestion in cachexia, and certainly does less harm than any other analgesic drug. For restless nights, bromides are useful for a very short time, but a single dose of heroin hypodermically at night is often sufficient, with only aspirin by day.

I seldom use the barbituric acid derivatives, as when anodynes become necessary I find morphia much the least harmful It is best given hypodermically. It is curious that in some cases heroin is quite ineffectual I try it first, beginning with  $\frac{1}{12}$  grain at night, and substitute morphine hydrochlor. only if the case does not respond to heroin.

Morphia suppositories may give much relief when the pelvis is invaded My own feeling is always strongly with the relatives that the patient must not be allowed to suffer pain. A responsible nurse should be directed to give an extra injection should pain intervene, provided that she reports the dose to the doctor. I have every dose noted in the day's report. On the

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# The Treatment of Strictures of Large Calibre by Means of Kollmann Dilators.

By H L ATTWATER, M CH, F R C S

*Honorary Assistant Surgeon to All Saints' Hospital for Genito-Urinary Diseases*

IT is known that the normal male urethra can be expanded under local anæsthesia to a calibre of 45 Charrière, and that the passage of a bougie frequently fails to detect the presence of a constriction until it has contracted to a size comparable with the external meatus, which averages about 23 Charrière. If these facts be appreciated in their true light it will be seen that there is plenty of time for a stricture to become fully established between the limits of 23 and 45 Charrière without arousing the least suspicion of such being the case.

It is very important, therefore, that every case of gonorrhœa which has shown signs of local infection of the lacunæ of Morgagni or of the glands of Littre, or which has been resistant to treatment, should be most carefully examined for the presence of incipient stricture before being sent away as cured. Routine urethroscopic inspection of all such cases shows that, in a very definite percentage, either there are still one or more patches of infected follicles, or that a section of the canal is the seat of a soft infiltration of the mucosa. The application of caustic or the diathermic point to the follicles will cure the first source of trouble,

whilst the second can be removed by a gentle stretching of the infiltration with a Kollmann's dilator.

There is one type of gonorrhœa which should always be borne in mind when considering the prophylaxis of stricture. I refer to those cases of infection which appear to be extremely mild, and during the last few years I have come to regard such cases with the greatest suspicion. The very ease with which the disease yields to treatment and the lack of symptoms should cause one to be all the more careful before dismissing the case as cured. The reason for this is that, whilst a large percentage of these cases are indeed trivial, and of no special importance, yet there are a certain number of them which offer a very stubborn resistance to complete recovery. All apparent symptoms and signs may disappear readily, and it is only by repeated microscopical examinations that the persistence of a minimal amount of trouble can be detected. Such cases, I believe, are exceedingly liable to form the basis of a future stricture, and no such case should ever be dismissed from observation before thorough examination has been made to exclude small foci of infection or the genesis of a soft infiltration. If this is always done a large number of strictures will be discovered at their birth when they can be readily dealt with.

*Routine Treatment of Stricture*—This consists of intermittent dilatations with the Kollmann's dilator at intervals of about seven days. It is based on the theory of Mr Canny Ryall, that, as every healthy urethra can be dilated to 45 Charrière under a local anæsthetic, the cure of stricture consists in restoring the urethra to its original state of dilatability by means of systematic periodic stretchings. It is an obvious improvement on allowing the stenosis to remain at the calibre of the external meatus, and I have convinced myself on many occasions that what he states is correct. I know of no other treatment which will give the same certainty of



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## TREATMENT OF STRICTURES

further yielding after waiting a few moments following the previous advance. When this point is reached the appliance is carefully closed and removed

This process, which lasts about a half to one hour, is repeated week by week, and it will be found that, if the technique is correct, there will be a steady weekly advance in the size to which the urethra can be dilated. When the limit of the instrument, 45 Charnière, is reached the case should not be regarded as cured but dilatations should be made to 45 on one, two, or more successive weekly occasions, until it is possible to reach the maximum expansion easily. At this stage it is also necessary to carry out one or more dilatations with the curved Kollmann's dilator to make certain that no part of the stricture has been left untreated.

The greatest care must be taken not to expand the appliance either too far or too fast, and an advance of one or two points over that reached on a previous occasion is all that is permitted.

The actual stretching should occupy about twenty minutes in a straightforward case, whilst in one of difficulty the dilatation should be spread over as much as forty to forty-five minutes. If pain occurs during treatment or there is severe bleeding when the instrument is removed from the urethra, it indicates a faulty technique, and greater vigilance must be exercised on future occasions both as to the rate of advance and as to the force needed to work the instrument. The more skilled an operator becomes the fewer will be his cases of bleeding, and the appearance of even a few drops of blood after a urethral dilatation should be regarded as a warning to go cautiously. The exact amount or the speed at which a case can be stretched at an individual sitting depends on the particular object, and it is impossible to indicate more than the general lines upon which one should proceed in an ordinary case.

cure in such a large percentage of cases. If properly carried out it is practically painless and does not take the patient away from his employment except for the actual time of treatment, which is usually required once a week. The technique must be carried out exactly and requires some patience and application on the part of the surgeon to acquire the necessary degree of experience. There are, however, no insuperable difficulties which need deter anyone from adopting this method.

It will have been discovered at a preliminary investigation whether the constriction will admit a closed Kollmann's dilator (23 Charrière). If not, bougies must be used until the requisite calibre is reached. Practically all strictures are, in part at least, situated in the anterior urethra, so that dilatations are always commenced with the straight pattern dilator. I regard it as bad technique to stretch any stricture with the curved instrument until the constriction in the anterior canal has been fully expanded, because the curved dilator is a much more severe appliance and, unless the anterior urethra has been stretched fully to allow efficient drainage, the minute traumatisms, which are inseparable from any form of instrumentation of the posterior urethra, may cause more or less severe attacks of catheter fever after each dilatation. By stretching the anterior urethra first the main portion of the stricture can be dealt with and the use of the curved instrument is restricted to a minimum. Occasionally a stricture is situated so far back that it cannot be reached by the straight instrument, which necessitates the use of the curved Kollmann from the commencement of treatment. Such cases are, however, relatively uncommon.

The actual stretching is carried out under efficient local anæsthesia, the dilator being opened step by step as the urethra gradually relaxes under the pressure of the dilating blades. This is continued until there is no

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dilator nerves, or from reflex inhibition of the vaso-constrictor nerves.

The tendency towards disorders of the capillary innervation may be inherent in the individual or acquired. PARRISIUS has described a clinical condition which he terms the vaso-neurotic constitution, characterized by a marked instability of the vascular system, both of the capillaries and arteries, and showing spontaneous changes in the innervation. Lesser degrees of this are of common occurrence as manifested by the individual who constantly suffers from cold feet, cold hands, chilblains, or marked tendency to blushing or to develop blotchy red patches on slight emotional disturbance.

It may be seen, then, that disorders of the capillary innervation may be due either to sympathetic inhibition or to activity of vaso-dilator nerves. Disorders of the vaso-dilator system may originate in (1) the central integrations of the posterior root fibres, (2) in the posterior root ganglion, or (3) in the nerve trunk or endings of the nerve in the capillary vessel.

In severe headache a red flush is sometimes seen over the forehead, and blushing also probably represents an outlet for an emotional state through the trigeminal integrations. The question of blushing is doubtful, since it is recorded that it occurs when the Gasserian ganglion is removed. Neuritis or neuralgia may be accompanied by flushing of the skin over the affected area, whether the origin is in functional disorder of the integrations in the cord, or in changes of an inflammatory nature in the posterior root ganglion or nerve trunk. Disorders of the nerve endings are manifested in urticaria, urticaria factata, angio-neurotic cedema, or dermatographia. The last, however, may represent an inherent instability or be acquired through the influence of toxic products, as in fever, or through a sensitization of the nerve trunk,

# Some Clinical Disorders of the Capillary Circulation.

By HECTOR M. WALKER, M.D.

*Harrow, Middlesex*

THE tendency for disorders of the small blood-vessels and capillaries to occur in disease is very marked in certain individuals, and may show itself in various forms. In other cases, apart from disease, there is an inherent instability of the capillary innervation. It is difficult in some instances to conclude whether the reaction of the capillaries observed is due to nerve influences or to influences acting directly upon the muscle cells of the capillary wall. Another factor which may require consideration is the possibility of the hormonal control of capillary tonus being deficient, allowing the nervous effects to be excessive.

It is only of comparatively recent years that the existence of a definite capillary innervation has been shown. It cannot be said that our knowledge of this question is yet on a satisfactory basis, and the innervation of capillaries in the deeper structures of the body is even less so.

Vaso-constriction and vaso-dilatation are brought about by different nervous mechanisms. Vaso-constrictor nerves arise from the sympathetic system, and only from this. The vaso-dilator nerves run in the posterior roots of the spinal nerves, or in the sensory roots of the cranial nerves, and have their cell stations in the ganglia. That is, vaso-dilatation is brought about by the afferent nerves conducting impulses away from, instead of towards, the cord. In a case where vaso-dilatation is observed, a further consideration comes into play. It may be either from the vaso-

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as in the *tache cérébrale* of meningitis. The abnormal sensitiveness towards certain foreign proteins shown by certain individuals, manifested by urticaria, vasomotor rhinitis, or asthma is due to sensitivity of the nerve endings, since various types of vaso-neuroses may be present simultaneously.

A case of asthma presented a feature of interest:—

This was in a boy of 13, who suffers from severe attacks of asthma, with occasional urticarial eruptions, with or without the asthma. For about 9 months he has had recurring attacks of swelling of the right knee-joint, which lasts for about 4 to 8 days, then subsides. The swelling appears quickly, and when at its height the patella is floated up from the bone. Altogether he has had eight attacks. X-ray examination is negative and the Wassermann test also. No treatment makes the slightest difference. There is no pain except when the swelling is marked, then he has some pain on the inside of the knee. Several of the attacks have coincided with an urticarial rash or asthma. The same agent, which, acting on the nerve endings of the skin capillaries, would produce urticaria, acting on the synovial membrane of the joint could produce such an effusion into the cavity. This is a case of true intermittent hyarthrosis, and the possibility of this being a vaso-neurosis has been emphasized by several writers.

The trigeminal nerve has a pronounced influence over the vascular system in its area of supply.

A woman of 54, of a nervous temperament, had been treated for about two years for supposed recurring attacks of erysipelas affecting the infraorbital region on both sides. These attacks came on every 3 to 5 months, and lasted for 3 or 4 days, then cleared up. When they were present she felt very sleepy and irritable, and often had a severe headache, but never any temperature. When I saw her in an attack there was a distinct swelling on both sides under the eyes. The swelling was rather tense and red, but not painful. The conjunctival vessels were slightly injected, and she said that she had difficulty in keeping awake. I could find no source of sepsis in the nose or teeth, and the alimentary system was satisfactory. I treated her by giving 15 gr ammonium bromide every 4 hours, and the attack cleared up in 30 hours. In the next attack she had I gave her morphia gr  $\frac{1}{4}$  at the outset. She slept for 7 hours, and when she woke up the redness and swelling had completely gone. In this case an abnormal flow of neural energy had found one outlet through part of the trigeminal nerve.

The tendency to sleep and the irritability of temper were probably also a manifestation of the same abnormal

## CAPILLARY CIRCULATION

excitation. It is of interest to note that her daughter, aged 26, suffers from urticaria.

Another case showing a peculiar vaso-motor response in the trigeminal area occurred in a working-man with severe right-sided trigeminal neuralgia following influenza. The pain was not constant, but would come on several times during the day. It developed quickly, and the tissues became exquisitely hyperæsthetic. The right eye watered, and he noticed that the right side of the nose was blocked when the pain was at its height. Shortly after it reached its height the nose would begin to run, and a great deal of watery discharge would come away. Coincident with the nasal discharge the pain would subside, and finally the pain and discharge would clear up. At first I thought that the nasal discharge had something to do with the relief of the attack, but it seems more probable that the relief of the pain removed the stimulus causing the congestion of the nasal mucosa, and that the swelling and hyperæmia were due to antidromic stimulation of the sensory nerves from the abnormal central excitation of the ganglion.

I would stress the point that evidence of reaction on the part of the capillary vessels in disease is not by any means uncommon. I wish to refer now to two cases of very different nature, in which disorder of the capillary innervation is the root of the condition.

A woman, aged 34, complained of rather irregular and profuse menstruation, coming on at intervals of 3 to 5 weeks. She was a thin, undersized woman, of poor education, but comfortable position in life. She was of a very emotional temperament, and had been married for 3 years. On examination there was no sign of a uterus. On questioning her it appeared that early in 1917 she was taken ill, and was operated upon in a country hospital as an urgent case. She could give no clear account of her illness, and was unaware until 1923, when she consulted a doctor, that the uterus had been removed. The operation had been done by the vaginal route. She said that menstruation was absent for 2 months after the operation, and that since then the longest interval had been 6 weeks. She had no pain at these periods, but felt nervous and irritable, and often had a headache just before the onset. The bleeding lasted usually for 3 days. On examination with the speculum the mucous membrane of the vagina was seen to be congested, particularly in the vault, and very small punctate bleeding-points were seen. In the intervals the mucous membrane appeared quite normal. Some time later, when convalescent from an attack of influenza, the bleeding started, and she complained of severe headache. At the same time she said that the arms would go numb and become very dark in colour. This would last for about  $\frac{1}{2}$  hour, then pass off. I saw her during an attack of this nature, and the arms assumed a blotchy purple colour, particularly on the forearms, and more marked on the ulnar side. One or two



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The trigeminal nerve has a pronounced influence over the vascular system in its area of supply.

A woman of 54, of a nervous temperament, had been treated for about two years for supposed recurring attacks of erysipelas affecting the infraorbital region on both sides. These attacks came on every 3 to 5 months, and lasted for 3 or 4 days, then cleared up. When they were present she felt very sleepy and irritable, and often had a severe headache, but never any temperature. When I saw her in an attack there was a distinct swelling on both sides under the eyes. The swelling was rather tense and red, but not painful. The conjunctival vessels were slightly injected, and she said that she had difficulty in keeping awake. I could find no source of sepsis in the nose or teeth, and the alimentary system was satisfactory. I treated her by giving 15 gr ammonium bromide every 4 hours, and the attack cleared up in 30 hours. In the next attack she had I gave her morphia gr  $\frac{1}{4}$  at the outset. She slept for 7 hours, and when she woke up the redness and swelling had completely gone. In this case an abnormal flow of neural energy had found one outlet through part of the trigeminal nerve.

The tendency to sleep and the irritability of temper were probably also a manifestation of the same abnormal

# Practical Notes.

## *Treatment of Pulmonary Tuberculosis after Childbirth.*

E Sergent treats pulmonary tuberculosis in women after childbirth by inducing a partial bilateral pneumothorax, on the theory that a sudden decompression of the lungs, following the sinking of the uterus after parturition, may arouse a tuberculous infection. The partial pneumothorax should be carried out within thirty-six hours of delivery, and simultaneously on both sides. In five cases of women with progressive tuberculosis of the lungs this treatment was employed after childbirth, with good results in three of the cases, and, employed in four other cases in which there was a history of a former pulmonary tuberculosis, it gave good results in three — (*Paris Médical*, January 2, 1926, p 17)

## *Fasting as a Cause of Convulsions in Children.*

H Josephs says that those who have been in resident posts in children's hospitals may have wondered at the apparent perversity which makes children seem to choose 5 or 6 a.m. to exhibit symptoms that may not be ignored. One might suspect that the occurrence of convulsions in the early morning is a matter of pure chance, but when one sees that there are children who have recurring attacks of convulsions, and that the onset in each instance is in the early morning, before breakfast, and not after, at night only when the child has missed his supper, after a meal only when he has vomited that meal, then suspicion is aroused and one is inclined to turn to a study of short fasting periods in a search for the explanation of the convulsions. Dr Josephs gives details of ten cases of this type, the children all being mentally normal, and having no symptoms pointing to epilepsy. The attacks followed comparatively short fasting periods, in general no longer than the usual one from supper to breakfast. Spontaneous recovery is the rule, and the therapeutic test—rapid recovery after administration of glucose—is useful only when the child has shown no tendency to spontaneous recovery. Studies carried out on several of the children who had come under observation indicated that the convulsions are probably of hypoglycaemic origin — (*American Journal of Diseases of Children*, February, 1926, p 169)

## *Diagnosis of Appendicitis.*

M O Iliescu brings forward a new point of importance in the diagnosis of appendicitis, namely, pain when pressing gently on the right vagus nerve in the neck, the tip of the finger being applied to the centre of the triangle which is formed by the two branches of the right sternomastoid muscle. Dr Iliescu states that this sign was positive in 150 successive cases which proved definitely to be

## THE PRACTITIONER

patches were present over the pectoral muscles, and the neck showed some red blotches. Pressure over the forearm was very painful, and she had practically no power in the arms. During the attack she was very excited and emotional. It passed off in 35 minutes, and the skin gradually assumed its normal colour, although some tingling and deep tenderness was left.

In this case there appears to be an inherent instability of the vascular innervation. It seems reasonable to suggest that there is an irritable focus in the spinal cord at the level of the pelvic nerves. The endocrine disturbance associated with the formation of the corpus luteum created an increased irritability in this centre, and the overflow caused stimulation of the nerves to capillary vessels of the vaginal mucosa. The congestive attacks on the arms are due to the vasomotor system being still more depressed by the toxins of influenza and some coexistent disorder of the nervous integrations at the region of the brachial nerves.

The other case is a girl of 11, who for about 5 years had suffered from a very marked instability of the capillary circulation of the arms and legs, more particularly in the hands and feet. She was constantly troubled with severe chilblains when the weather was in anyway cold, and the skin of the hands and feet would assume a dark purple colour which would give way to a reddish flush after prolonged warming. The skin never had a normal appearance. Two years after this condition started the metacarpo-phalangeal joints became enlarged, and, later, the proximal interphalangeal joints, although to a lesser degree. The ankles and wrists were also slightly enlarged, and the hands became broad and "spade" shaped. The swelling affected the bony ends, and distinct crepitations were present in some of the metacarpo-phalangeal joints. The mother suggested that it looked as though the chilblains had affected the joints, and I think this explanation was truer than she suspected. The most noticeable feature was the extraordinary instability of the capillary circulation. This instability affecting the vessels in the growing ends of the bones could readily produce changes of the nature described, and I think this is the explanation of the conditions.

It seems probable that a fuller understanding of the factors modifying capillary circulation and the reactions of the capillaries in disease would yield much information of value in clinical medicine.

## PRACTICAL NOTES

### *Treatment of Congenital Syphilis.*

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In an editorial article on the treatment of pulmonary congestion it is recommended that when the disease is of pneumococcal origin, antipneumococcal serum should be used, giving 1 ccm at first, and 40 to 60 ccm four hours later, to avoid any danger of anaphylaxis, this can be repeated once or twice. In children the antipneumococcal serum is not advised, and one of the following formulæ should be substituted

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P Baumm discusses the value of rectal as contrasted with vaginal examination in labour, basing his conclusions on 864 consecutive cases. In 80 per cent of the cases neither rectal nor vaginal examination was necessary, but such an examination was necessary when the head failed to become engaged at the brim of the pelvis and there was the possibility of prolapse of the cord, when there was uncertainty as to the presentation, in cases of hæmorrhage, and in cases of abortion in the sixth and seventh months. In the cases of placenta prævia and of abortion, rectal examination was of no value, and in the majority of the other cases a vaginal examination had to be made in order to come to a definite conclusion, in only 17.7 per cent of the examinations could a correct diagnosis be made after rectal examination alone — (*Zentralblatt für Gynäcologie*, April 3, 1926, p 846)

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### *Treatment of Laryngeal Tuberculosis with the Galvano-cautery.*

L de Reynier discusses the treatment of tuberculosis of the larynx with the galvano-cautery, giving details of three cases in which such cauterization resulted in highly beneficial results, so far as the larynx was concerned. Dr de Reynier states that similar results have been brought about in hundreds of cases within the past twenty years. He attributes the healing to the cauterization bringing about an increase locally in leucocytes, and to the adjacent healthy cells producing antitoxins. He notes, however, that the local healing in the larynx had no influence upon the tuberculosis of the lungs, which is always the primary focus of the disease in these cases — (*Presse Médicale*, March 10, 1926, p 310 )

### *Treatment of Tumours of the Bladder.*

J H Cunningham and R C Graves agree that the treatment of malignant disease of the bladder is one of the biggest unsettled problems in urology, the reason being that such tumours present the same difficulty of successful eradication as do tumours of similar character elsewhere in the body, and that early recognition is unusual. Frequently well-advanced tumours are observed by urologists on making a cystoscopic investigation after a first attack of hæmaturia. The authors come, therefore, to the conclusion that painless hæmaturia must be regarded as almost diagnostic of bladder tumour. In regard to treatment, whatever is done in the extensive infiltrating malignant tumours of the bladder, recurrences are common, and any new procedure which may have an element of promise for better handling of the problem should be welcome. With the advent of diathermy the authors were convinced that the proper form of heat is a destructive agent, and that larger areas may be destroyed by its proper application than by any other means. The only limitation in connection with the destruction of tumour-tissue by heat was that of destroying only the desired area without also destroying adjacent healthy tissue and injuring neighbouring important structures. If diathermy were to be employed with any degree of accuracy, some means to determine what the surgeon was doing with it in any given operation was a primary essential. The authors, with the aid of Professor W Bovie of the Bio-physics Department at Harvard, constructed a device to control the dosage of diathermy, and state that with its aid the desired area can be completely destroyed without the destruction of adjacent areas — (*Boston Medical and Surgical Journal*, April 1, 1926, p 573 )

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## *Treatment of Pelvic Infections.*

T H Cherry states that of 1,105 cases of pelvic infections in the Harlem Hospital, New York, the gonococcus was the inciting agent in 88 per cent. He comes to the conclusion that exclusively conservative treatment of adnexal disease is unsatisfactory, the patient on discharge from hospital being inclined to ignore the advice given urging return visits. Injections of foreign protein in the form of milk preparations and horse serum proved unsatisfactory. The use of diathermy as a conservative measure in the treatment of adnexal disease of gonorrhoeal origin was the most successful of the palliative methods, as it caused a resolution of pelvic masses in 66.6 per cent of cases, besides relieving pain in practically 100 per cent. Initial acute attacks of adnexal inflammation should not be treated surgically, as they subside spontaneously. Recurrent attacks of pelvic inflammation should be treated surgically, if the temperature has remained normal for three to ten days, and the leucocyte count is below 16,000—(*Surgery, Gynecology and Obstetrics*, May, 1926, p 600)

## *Diet in the Treatment of the Pre-Eclampsia State.*

V J Harding and H B Van Wyck note that while the ultimate origin of eclampsia and the pre-eclampsia state are obscure, it is commonly held that dietary influences play a part in the production of the symptoms. They have carried out a series of fifteen experiments on the influence of protein fat and carbohydrate feeding on pre-eclampsia, and come to the following conclusions. Patients showing pre-eclamptic symptoms have been given diets high in protein or fat, but salt-free, and such diets produced no aggravation of symptoms, but on the contrary such patients showed clinical improvement. Ordinary hospital or home diets can be used in the treatment of pre-eclampsia, the authors therefore insist, provided they are salt-free. No attempt was made to purge the patients or to force fluids on them. The inclusion of one ~~salt-free~~ week in four as a prophylactic measure against pre-

## PRACTICAL NOTES

eclampsia is suggested as an addition to the usual pre-natal care — (*Journal of Obstetrics and Gynaecology of the British Empire*, Spring, 1926, p 17)

### *The Significance of Pain in Cancer of the Breast.*

S Ginsburg points out that pain in cancer of the breast is one of the most neglected but, nevertheless, one of the most important clinical problems, not only from a diagnostic, but also from a prognostic and therapeutic standpoint. If the pain is superficial it is usually a warning that ulceration is impending, if deep-seated, the presence of pain in the breast may be an ominous sign that the deep structures of the thorax have already been invaded, when local pain is present in the axilla or begins to radiate along the lateral chest-wall, evidence of axillary lymphnode invasion will usually be found. Pain in the most widespread distribution and in the most widely varying forms, from the mildest to the most severe, is found when the breast cancer gives rise to metastases in the skeleton. The frequency of skeletal invasion in cancer of the breast, insists Dr Ginsburg, is greatly under-estimated, he has found it in 74.6 per cent of advanced cases. To attribute such pain to myalgia, neuralgia, rheumatism, neurasthenia, or hysteria, even though no objective physical signs of malignancy are present to account for it, is exceedingly hazardous. Frequent and repeated X-ray examinations of the skeleton for bone metastases should be carried out, and when found to be present should be treated by intensive radiotherapy, in a spirit of optimism. As a corollary to this, prophylactic post-operative radiation in breast carcinoma ought to include not only the breast region, but a judicious X-raying of the skeleton, with special reference to the most frequent sites of bone invasion — (*The American Journal of the Medical Sciences*, April, 1926, p 520)

### *Value of the Dick Test*

R Debré, Lamy, and Bonnet have made a careful estimation of the value of the Dick test for scarlet fever immunity in 677 children, in whom the test was positive in 25 per cent under the age of one year, in 44 per cent between the ages of one and three years, and in 15 per cent at the age of fifteen years, the percentage gradually diminishing as that age was approached. In all of sixty-four children who were convalescent from scarlet fever the test was negative, and in four cases of scarlet fever the test had been positive a short time before the onset of the disease, the test becoming negative during their convalescence. At the onset of scarlet fever there was a positive reaction in eight out of nineteen children. The conclusions to which the authors come is that the Dick test is not of any help as regards the diagnosis of scarlet fever, but that it does show whether or not the child is immune to that disease — (*Bulletin de la Société Médicale des Hôpitaux*, March 19, 1926, p 476)

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# Preparations, Inventions, Etc.

## CANADIAN PACIFIC HOLIDAY TOURS

(London Canadian Pacific Railway, 62-65 Charing Cross, S W 1 )

The best vacation for the busy professional or business man is a complete change of scene and interests To cross the Atlantic for a holiday may have seemed in the past beyond the purview of the ordinary vacation seeker in this country, who has limited his horizon to Devon, Scotland, Switzerland or the Riviera, but the enterprise of the Canadian Pacific Company has smoothed away all difficulties For an inclusive fare of £195 one gets a four-and-a-half days' Atlantic voyage followed by the two days' trip up the wonderful scenery of the St Lawrence River, then first-class railway travel across Canada to Niagara Falls, the Great Lakes, the illimitable Prairie Country, the majestic Rockies, right away to Vancouver and Victoria on the Pacific coast, and back home again Sight-seeing drives at points of interest, all meals and all gratuities throughout the tour, as well as travel and hotels, are included, full particulars will be sent on application, mentioning THE PRACTITIONER

## A MANOMETRIC LUMBAR PUNCTURE NEEDLE

(London Messrs Allen & Hanburys, Ltd, 48 Wigmore Street, W 1 )

Dr J G Greenfield has introduced a new manometric lumbar puncture needle He suggests that the pressure of the cerebrospinal fluid is not measured in this country as often as it should be, chiefly because of the difficulty of doing this single-handed with the apparatus at present on the market, these all consist of attachments which are fitted into the lumbar puncture needle after the fluid has begun to flow This has several disadvantages one is the fact that only one hand is available to withdraw the stylet and pick up and attach the manometer, the other hand being engaged in steadying the lumbar puncture needle and holding a tube to collect the fluid that escapes in the interval, another disadvantage is that slight movement of the needle in or out during the process of attaching the manometer may displace the point so that the flow of fluid ceases To obviate these disadvantages, the new lumbar puncture needle has a three-way cock and a side tube for the manometer incorporated in the handle, with very little increase in weight In using this needle the manometer, whether of the glass tube or the aneroid variety, is attached by rubber tubing to the needle as soon as it is felt to have entered the spinal canal Then, while one hand holds the needle in place the other simply removes the stylet and, if fluid appears, turns the stopcock through a quarter circle in the direction of the manometer tube When the pressure and pulsation of the fluid has been noted, a turn of the tap towards the handle of the needle allows the fluid to run out of the manometer into the

# Reviews of Books.

*Human Physiology* By JOHN THORNTON, M A Completely revised by W A M SMART, M B, B S, London Hospital Medical College Pp viii and 463 Third edition London Longmans, Green & Co 10s 6d net

THIS book covers the whole range of physiology with the exception of embryology and development Histology is dealt with in the first chapter, and another chapter is devoted to the chemistry of the body, both are necessarily brief, but all the essentials appear to be included Then the various functions of the body are described, commencing with muscular and nervous tissues, and finishing with the special senses It would be impossible in a book of this size to deal fully with everything, but so far as we can discover none of the essentials has been omitted Reference is also generally made to the applications of physiology to the investigation and interpretation of morbid conditions, so that the book forms an excellent summary of the subject for the medical student and practitioner The book is clearly printed on good paper, has 281 illustrations, some coloured, and at the end a series of progressive questions (rather a novel feature in a book of this kind) and a glossary are included

*Operative Orthopedics* By A STEINDLER, M D, F A C S Pp 403 Illustrations 83 London and New York D Appleton & Co 30s net

THE operations of orthopædic (orthopedic gives a mistaken idea of the derivation) surgery increase rapidly year by year, and the appearance of a volume which guides us in the choice and selection of recognized methods is timely The author applies four principal tests in making his selection They are What is the rationale of the operation, meaning by that, the physiological, biological and mechanical bases which determine the applicability of the method? Then, how far does the operation meet the clinical requirements? He carefully analyses the essential points of various operations, before giving a full description, and lastly, in estimating the value of any operation he applies the test of statistics One point we like very much, when he has had considerable experience of a method he quotes his own figures, under the headings of good, fair, poor Professor Steindler is well known for the originality of his work on reconstructive problems after mutilation of the upper extremity The present volume will enhance his reputation as an authority, for it evidences wide and practically acquired knowledge, much clinical experience, and a faculty of disciplined criticism The book is complete and up to date, and will be of service not only to orthopædic surgeons, but also to those practising general surgery



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collecting tube and also allows further flow of fluid from the spinal canal. When the tap is turned away from the manometer the manometer empties itself but the spinal canal is shut off. If it is desired to inject anything into the spinal canal, the tap may be turned towards the point of the needle, so that the manometer is shut off, but it may be thought better to leave the manometer tube open, so that the injection pressure may be gauged and controlled. The forward position of the tap may also be used for replacing fluid with air. It is advisable to sterilize the needle with the stylet out and with the tap turned towards the handle, as in that position water passes freely into the manometer tube from the inside of the needle.

## POMSOMA

(London Mr M A Muegge, 29 Batoum Gardens, W.6)

Pomsoma is the name given to a preparation manufactured by Messrs Elefanten-Apotheke, of Berlin, in the form of tablets, which are sold in glass tubes containing ten and twenty tablets each. The chief constituent is diethylbarbituric acid (veronal), and it also contains amidopyrazol and acetylsalicylic acid. The tablets are recommended for insomnia, nervous irritation, seasickness, etc., and they can be prescribed with confidence in suitable cases, as they do not appear to have any detrimental after-effects in the doses recommended.

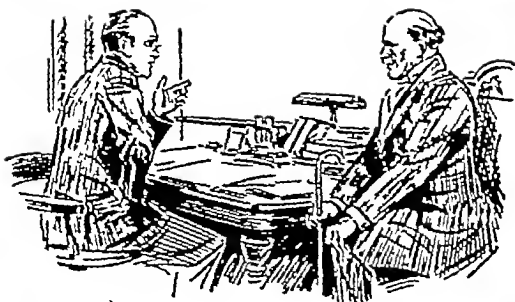
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In 1914, when the supply of German analytical reagents was cut off by the war, the Institute of Chemists and the Society of Public Analysts stepped into the breach, and a joint committee was formed from the Councils of these two bodies, which drew up and issued a list of specifications of purity for 88 analytical reagents, these specifications of purity were indicated by the letters "A R". Some years ago proposals were made to the Council of the Institute of Chemistry that they should revise and reissue the list, which was out of print, but the decision was made not to take any further steps, the previous action of the Institute being considered war emergency work. There is no doubt, however, that there is a real need for such a work of reference, and the firm of the British Drug Houses must be congratulated on their public spirit and enterprise in publishing this revised and enlarged list of specifications of purity for analytical reagents, which reflects credit on all concerned.

## VICTOR HORSLEY MEMORIAL LECTURE

We are asked by the British Medical Association to announce that the Second Victor Horsley Memorial Lecture will be given in the Council Room of the British Medical Association House, Tavistock Square, on Friday, July 9th, 1926, at 5 p.m. The Lecturer will be Mr Wilfred Trotter, M.S., F.R.C.S., and his subject "The Insulation of the Nervous System". The Chair will be taken by Sir John Bland-Sutton, LL.D., P.R.C.S., and admission will be free on presentation of visiting card.



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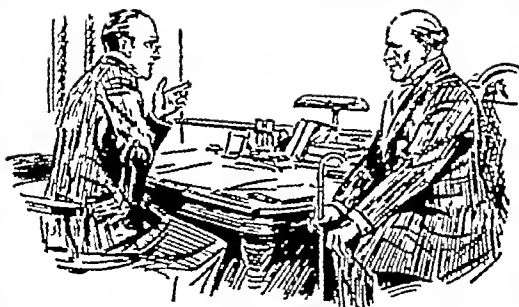
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collecting tube and also allows further flow of fluid from the spinal canal. When the tap is turned away from the manometer the manometer empties itself but the spinal canal is shut off. If it is desired to inject anything into the spinal canal, the tap may be turned towards the point of the needle, so that the manometer is shut off, but it may be thought better to leave the manometer tube open, so that the injection pressure may be gauged and controlled. The forward position of the tap may also be used for replacing fluid with air. It is advisable to sterilize the needle with the stylet out and with the tap turned towards the handle, as in that position water passes freely into the manometer tube from the inside of the needle.



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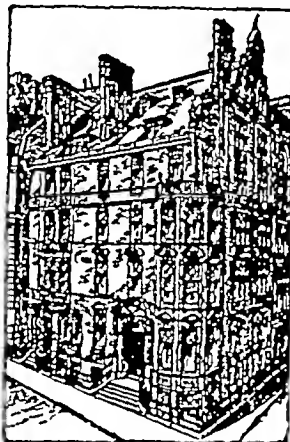
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## Editorial :—

Communications relating to the Editorial Department must not be addressed to any individual member of the Profession on the staff, but to The Editor, "THE PRACTITIONER," Howard Street, Strand, London, W C 2

Original articles, clinical lectures, medical society addresses, and interesting "cases" are invited, but are only accepted upon the distinct understanding that they are published exclusively in "THE PRACTITIONER." Unaccepted MS will not be returned unless accompanied by a suitable stamped addressed envelope



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*Senior Surgeon, West London Hospital, Lecturer on Surgery and Teacher of Operative Surgery, West London Hospital Post-Graduate College; Surgeon, National Hospital for Nervous Diseases, Consulting Surgeon, Italian Hospital*

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*Physician to University College Hospital, and to the Hospital for Consumption, Brompton*

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*Registrar, The Infants' Hospital, London, late Assistant Medical Officer of Health, Huddersfield*

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McLAUGHLIN, M.B., Ch.M., Assistant Medical Officer, Tuberculosis Department, St Thomas's Hospital, formerly Resident Medical Officer, City of London Hospital for Diseases of Heart and Lungs

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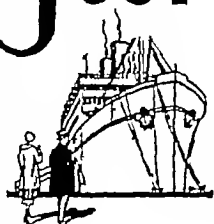
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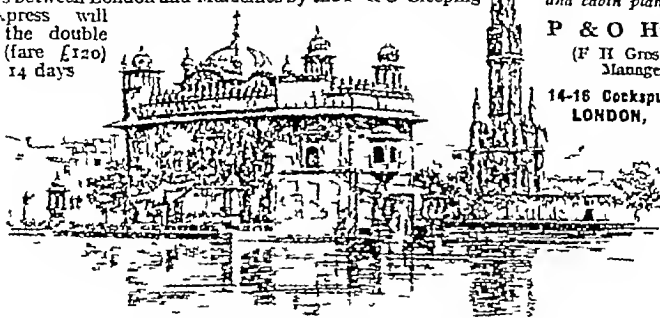
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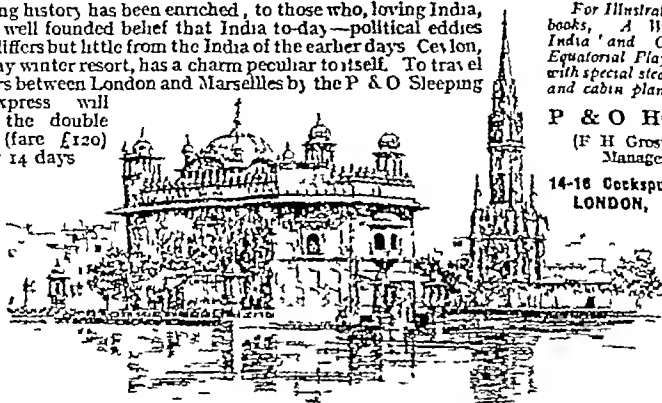
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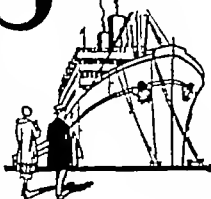
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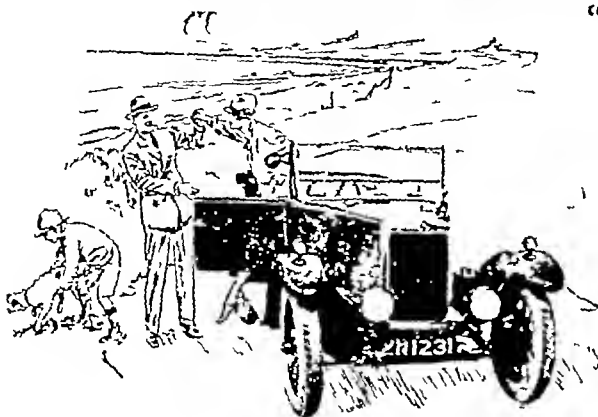
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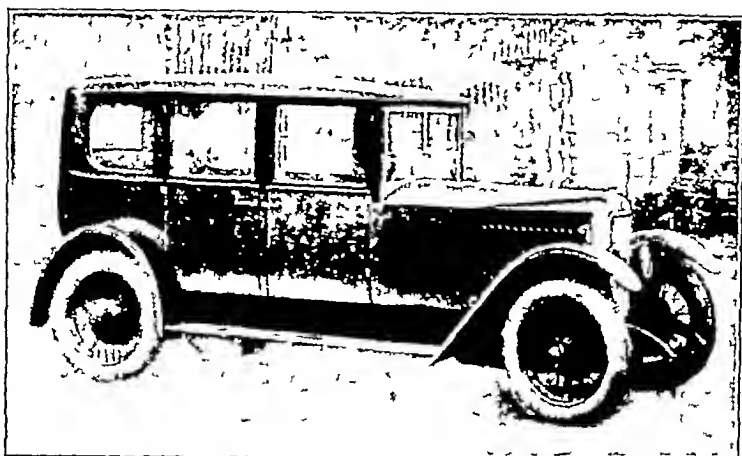
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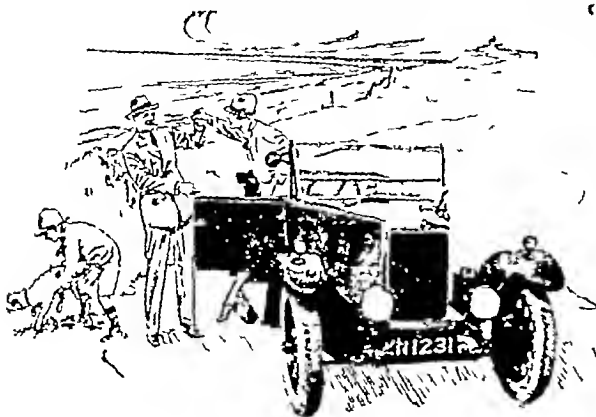
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Candidates must be under 32 years of age at the time of application, and must possess qualifications registrable in Great Britain and Ireland under the Medical Acts now in force.

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Up to the present time Indian Medical Service officers have been employed both in civil and military Departments of Government and have been later changeable between the two. The practice as regards employment in the civil and military side of the Service has been as follows:—

At the beginning of his career an officer was employed on the military side, which has medical charge of the Indian Army. If he remained in military employ he held a post on the staff of a station hospital, or a specialist post, or a post on the administrative staff of the Army, promotion being on a time scale up to the rank of Lieutenant Colonel and by selection to the ranks of Colonel and Major General. He could however, if he chose, apply after two years' Indian military service to be registered as a candidate for transfer to the civil side, from which appointments are made to civil surgeoncies established at the principal civil centres to provide for the medical needs of civil officials and for general medical administrative purposes and to the specialist services (for example public health, bacteriological and research departments, and the professorships in the medical schools). Such transfers normally took place after about seven years' service in military employment.

The Lee Commission has, however, recommended certain changes in the organization of the Medical Services in India, and in view of their recommendations only military employment can be guaranteed to officers entering the Indian Medical Service at the present time. It is however guaranteed that they will be eligible for civil employment under such conditions of service as may be made applicable to officers in future appointed to the Indian Medical Service as a result of decisions taken on the Lee Commission report.

### PRIVATE PRACTICE

Executive medical officers in both civil and military employment may attend persons unconcerned with Government service provided their duty admits of it. Candidates are, however, informed that while serving on the military side the opportunities for private practice are not great.

### WAR SERVICE

Service during the war as a medical or combatant officer or in a position usually filled by an officer counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

### PAY

The monthly rates of pay for European officers in the Service are as follows:—

| Rank Service in Rank | Basic Pay | OVERSEAS PAY         |                    | Year of Total Service |
|----------------------|-----------|----------------------|--------------------|-----------------------|
|                      |           | If drawn in Sterling | If drawn in Rupees |                       |
|                      | Rs        |                      |                    |                       |
| LIEUTENANT           | 500       | { —<br>—<br>—        | 150<br>150<br>150  | 1st<br>2nd<br>3rd     |

### CAPTAIN—

|                                                              |     |                     |                      |
|--------------------------------------------------------------|-----|---------------------|----------------------|
| 1 During first 3 years' service as Captain                   | 650 | { 150<br>150<br>150 | 4th<br>5th<br>6th    |
| 2 With more than 3 and less than 6 years' service as Captain | 750 | { 250<br>250<br>250 | 7th<br>8th<br>9th    |
| 3 With more than 6 years' service as Captain                 | 850 | { 250<br>250<br>300 | 10th<br>11th<br>12th |

### MAJOR—

|                                                            |       |                     |                     |
|------------------------------------------------------------|-------|---------------------|---------------------|
| 1 During first 3 years' service as Major                   | 950   | { —<br>—<br>—       | —<br>—<br>—         |
| 2 With more than 3 and less than 6 years' service as Major | 1,100 | { —<br>—<br>—       | —<br>—<br>—         |
| 3 With more than 6 years' service as Major                 | 1,250 | { 300<br>300<br>300 | 13th<br>and<br>over |

### LIEUT. COLONEL—

|                                               |       |               |             |
|-----------------------------------------------|-------|---------------|-------------|
| 1 Until completion of 23 years' total service | 1,500 | { —<br>—<br>— | —<br>—<br>— |
| 2 During 24th and 25th years' total service   | 1,600 | { —<br>—<br>— | —<br>—<br>— |
| 3 After completion of 25 years' total service | 1,700 | { —<br>—<br>— | —<br>—<br>— |
| 4 When selected for increased pay             | 1,850 | { —<br>—<br>— | —<br>—<br>— |

N.B.—Until the completion of 23 years' total service basic pay is regulated according to rank and service in rank (columns 1 and 2) which, owing to the system of accelerated promotion may be in advance of the time scale of promotion. Overseas pay is regulated solely with reference to length of total service (column 6).

In addition to the above, there are a number of appointments as Colonels on Rs 2,200 to Rs 2,500 according to the appointment held, and as Major General on Rs 2,750. The appointment of Director of Medical Services in India carrying pay at Rs 3,200 per mensem, may also be held by an officer of the Indian Medical Service.

It may be pointed out to intending candidates that the initial rates of pay for the Indian Medical Service as for all Government Departments are based on the assumption that the majority of newly appointed officers will be bachelors. It is also the case that an officer when junior is liable to more frequent changes of station than later on in his service, and he may therefore be put to considerable expense for transfers if he has a family. Officers, therefore, who join the Service married may have considerable difficulty in living within their pay during the first few years of their service.

EXTRAS—In addition to the above rates, officers in military employment when in command or second in command of the larger station hospitals, receive special allowances. On the civil side there are Public Health, Bacteriological, Research, and Professional appointments carrying special enhanced rates. Special rates of pay are attached to the administrative appointments open to officers in both branches of the Service.

### OUTFIT ALLOWANCE

Officers on appointment will receive an outfit allowance of £50 subject to certain provisions as regards previous commissioned service in any branch of His Majesty's Forces.

Continued on page vii

**INDIAN MEDICAL SERVICE**—Continued from page vi.**PENSIONS**

The rates of pensions are as follows —

| Service.       | Rates per annum | Service.       | Rates per annum |
|----------------|-----------------|----------------|-----------------|
| After 17 years | £400            | After 23 years | £620            |
| " 18 "         | £430            | " 24 "         | £660            |
| " 19 "         | £460            | " 25 "         | £700            |
| " 20 "         | £500            | " 26 "         | £750            |
| " 21 "         | £540            | " 27 "         | £800            |
| " 22 "         | £580            |                |                 |

The above rates are subject to revision upwards or downwards to an extent not exceeding 20 per cent. in all, on account of a rise or fall in the cost of living as compared with the year 1919. A deduction of 4 per cent. on this account has already been made. A further revision may take place on the 1st July 1927, and every three years thereafter.

There are additional pensions ranging from £125 to £350 per annum for officers who have held high administrative appointments as Colonels or Major Generals. These pensions are not subject to the reduction mentioned above.

**PASSAGES**

Officers on appointment are, when possible provided with passage to India by transport. When such accommodation is not available passage at the public expense is provided by private steamer or passage allowance is granted if preferred. The wives and families of officers who are married prior to the date of the officer's embarkation on first appointment to the Indian Medical Service will also be provided with passage to India at the public expense under the same conditions as those applicable to the officers themselves.

Indian Medical Service officers are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their career.

**INCREASED CADRE**

The allowance for furlough has been increased to 25 per cent. and the cadre has been increased 2½ per cent. for study leave, making a total of 27½ per cent. There are special allowances for officers whilst on study leave.

Further particulars can be obtained on application to the SECRETARY, MILITARY DEPARTMENT, INDIA OFFICE, WHITEHALL, LONDON S W 1. Letters should be marked Recruitment for I.M.S.

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| Sulphate of potassium  | 0.433 "        |
| Chloride of magnesium  | 0.800 "        |
| Bicarbonate of calcium | 0.406 "        |

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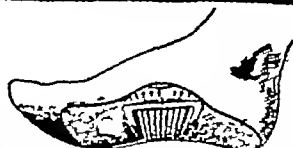
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# INDIAN MEDICAL SERVICE

## SPECIAL RECRUITMENT, 1926.

The Secretary of State for India announces that a Committee will be held at the India Office in the near future for the selection of European candidates for direct appointment to permanent commissions in the Indian Medical Service on special terms which include a gratuity of £1,000 after six years' service or £2,500 after 12 years' service, together with free return passage to any officer so appointed who no longer desires to remain in the service. Otherwise the terms will be as detailed below:—

### APPOINTMENT

Candidates must be under 32 years of age at the time of application, and must possess qualifications registrable in Great Britain and Ireland under the Medical Acts now in force.

### CONDITIONS OF SERVICE

Up to the present time Indian Medical Service officers have been employed both in civil and military Departments of Government, and have been later changeable between the two. The practice as regards employment in the civil and military side of the Service has been as follows:—

At the beginning of his career an officer was employed on the military side, which has medical charge of the Indian Army. If he remained in military employ he held a post on the staff of a station hospital, or a specialist post, or a post on the administrative staff of the Army, promotion being on a time scale up to the rank of Lieutenant Colonel and by selection to the ranks of Colonel and Major General. He could however, if he chose, apply, after two years' Indian military service, to be registered as a candidate for transfer to the civil side, from which appointments are made to civil surrogacies established at the principal civil centres to provide for the medical needs of civil officials and for general medical administrative purposes and to the specialist services (for example public health, bacteriological and research departments and the professorships at the medical schools). Such transfers normally took place after about seven years' service in military employment.

The Lee Commission has, however, recommended certain changes in the organization of the Medical Services in India and in view of their recommendations only military employment can be guaranteed to officers entering the Indian Medical Service at the present time. It is however, guaranteed that they will be eligible for civil employment under such conditions of service as may be made applicable to officers in future appointed to the Indian Medical Service as a result of decisions taken on the Lee Commission report.

### PRIVATE PRACTICE

Executive medical officers in both civil and military employment may attend persons unconnected with Government service provided their duty admits of it. Candidates are, however, informed that while serving on the military side the opportunities for private practice are not great.

### WAR SERVICE

Service during the war as a medical or combatant officer or in a position usually filled by an officer counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

### PAY

The monthly rates of pay for European officers in the Service are as follows:—

| Rank: Service<br>In Rank | Basic<br>Pay | OVERSEAS PAY               |                          | Year of<br>Total<br>Service |
|--------------------------|--------------|----------------------------|--------------------------|-----------------------------|
|                          |              | If drawn<br>in<br>Sterling | If drawn<br>in<br>Rupees |                             |
|                          | Rs           |                            |                          |                             |
| LIEUTENANT               | 500          | { —                        | 150                      | 1st                         |
|                          |              | { —                        | 150                      | 2nd                         |
|                          |              | { —                        | 150                      | 3rd                         |

|                                                             |     |                                             |  |
|-------------------------------------------------------------|-----|---------------------------------------------|--|
| CAPTAIN—                                                    |     |                                             |  |
| 1 During first 3 years' service as Captain                  | 650 | { — 150 4th<br>15 150 5th<br>15 150 6th     |  |
| 2 With more than 3 and less than 6 years service as Captain | 750 | { 25 250 7th<br>25 250 8th<br>25 250 9th    |  |
| 3 With more than 6 years service as Captain                 | 850 | { 25 250 10th<br>25 250 11th<br>30 300 12th |  |

|                                                           |       |                        |  |
|-----------------------------------------------------------|-------|------------------------|--|
| MAJOR—                                                    |       |                        |  |
| 1 During first 3 years' service as Major                  | 950   | { — — —                |  |
| 2 With more than 3 and less than 6 years service as Major | 1,100 | { — — —                |  |
| 3 With more than 6 years service as Major                 | 1,250 | { 30 300 13th and over |  |

|                                               |       |         |  |
|-----------------------------------------------|-------|---------|--|
| LIEUT. COLONEL—                               |       |         |  |
| 1 Until completion of 23 years' total service | 1,500 | { — — — |  |
| 2 During 24th and 25th years total service    | 1,600 | { — — — |  |
| 3 After completion of 25 years total service  | 1,700 | { — — — |  |
| 4 When selected for increased pay             | 1,850 | { — — — |  |

N.B.—Until the completion of 23 years' total service basic pay is regulated according to rank and service in rank (columns 1 and 2) which owing to the system of accelerated promotion may be in advance of the time scale of promotion. Overseas pay is regulated solely with reference to length of total service (column 6).

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### OUTFIT ALLOWANCE

Officers on appointment will receive an outfit allowance of £50 subject to certain provisions as regards previous commissioned service in any branch of His Majesty's Forces.

Continued on page vii

# THE MUSEUM GALLERIES

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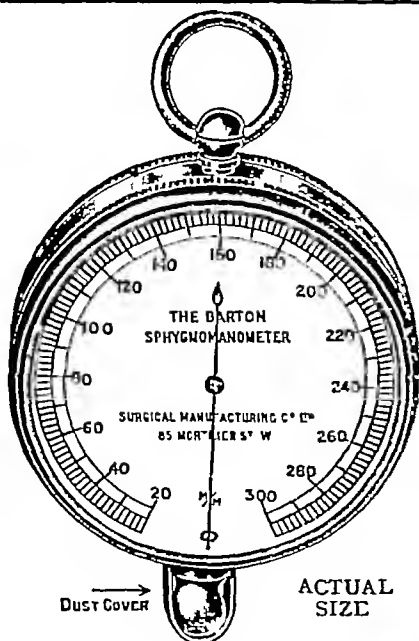
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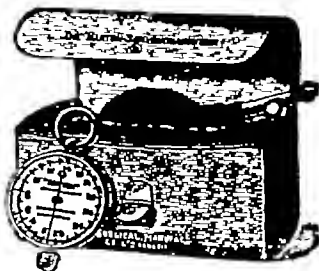
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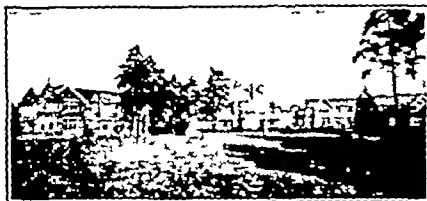
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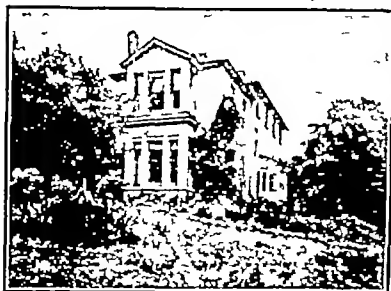
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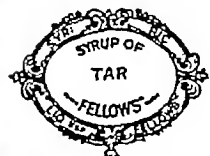
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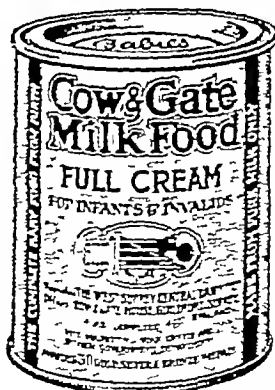
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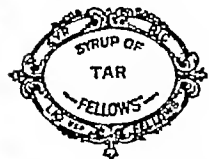


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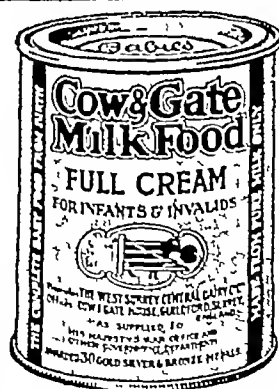
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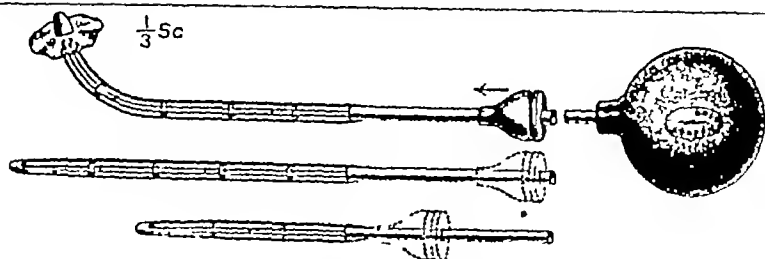
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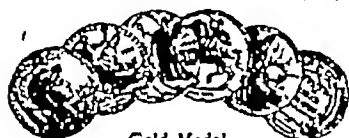
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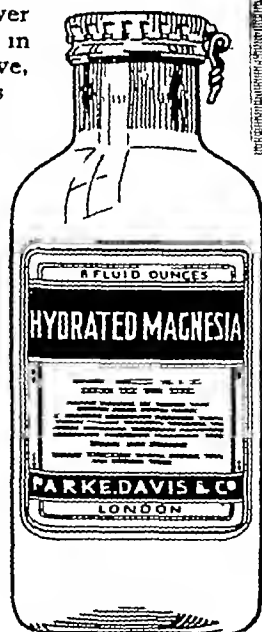
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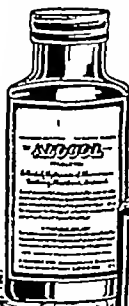
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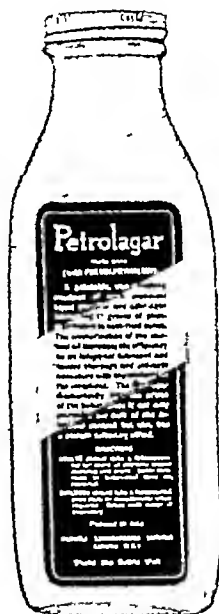
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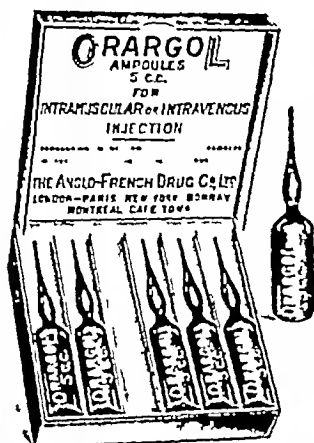
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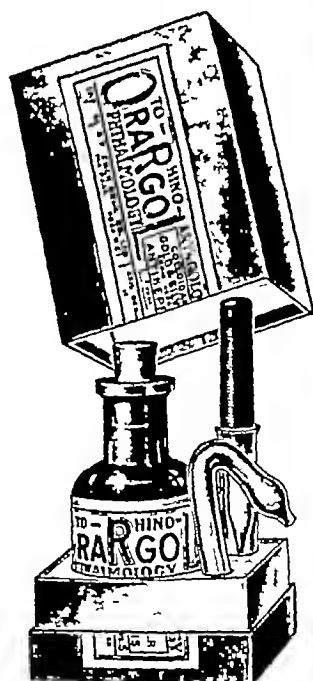
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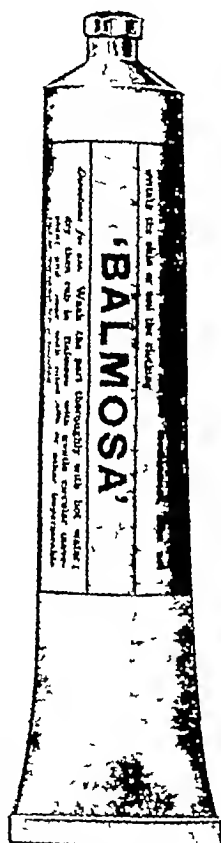
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# THE PRACTITIONER

AUGUST

1926

## The Treatment of Head Injuries.

By DONALD J ARMOUR, CMG, F.R.C.S

*Senior Surgeon, West London Hospital, Lecturer on Surgery and Teacher of Operative Surgery, West London Hospital Post-Graduate College, Surgeon, National Hospital for Nervous Diseases, Consulting Surgeon, Italian Hospital, etc*

IN the treatment of injuries of the head there are certain anatomical arrangements of the constituent parts which should always be remembered. This refers more particularly to the layers of the scalp and the communications between its vessels and those of the skull and with the intracranial sinuses, for it is upon the knowledge of this anatomical arrangement that the line of treatment should be based. This knowledge will make clear the grave risks which follow in the train of neglect or inadequate treatment. The scalp proper (skin, superficial fascia, and epicranial aponeurosis) is only loosely connected by areolar tissue to the pericranium (external periosteum). This areolar connective tissue layer has been justly called the "dangerous layer" of the scalp, because in it there is no bar to the spread of suppuration, posteriorly to the superior curved line of the occipital bone, anteriorly to the

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## TREATMENT OF HEAD INJURIES

is absolutely necessary in children if anything approaching proper cleansing is to be obtained. Temporary hæmostasis can be obtained by fixing a rubber bandage, a piece of drainage tube, or an ordinary bandage tightly about the head. It should be placed across the forehead, just above the ears and beneath the occiput. The wound should then be cleansed. It is necessary first to shave the scalp widely all around the wound. No consideration of cosmetic effects should prevent this being done. Then scrub the wound and surrounding scalp with a nail brush and soap and water, removing all dirt, hairs and clots from the wound. Take time to do this thoroughly. In a conscious patient it can only so be done under an anæsthetic. Every particle of foreign matter should be removed by scrubbing, irrigation, or forceps. To do this satisfactorily it may be necessary to enlarge the wound. Do not hesitate to do so. "A scalp wound properly cleansed, antisepticized and drained represents in a high degree the possibilities of good surgery; a scalp wound improperly cared for, covered with hair and matted blood, and its extent undetermined, represents one of the worst forms of surgical neglect" (Warbasse). Hence the paramount importance of shaving and disinfecting a wide area of scalp surrounding the wound to facilitate this manœuvre. Should no fracture, either depressed or fissured, be present, the edges of the scalp wound should be approximated by a few interrupted sutures of horsehair or silkworm gut.

Provision should always be made for drainage. This can be secured by a small tube, rubber dam, or a few strands of silkworm gut placed in the lower angle of the wound. Should a flap have been torn or turned down, drainage should be secured by making an opening in its base for the tube. The wound should be dressed daily for the first few days in order to discover signs of superficial or deep infection. Drainage may be dis-



superciliary ridges, and laterally to, or even below, the level of the zygoma. The pericranium is very slightly adherent to the bone beneath, except at the sutures and foramina. It is owing to this attachment at the suture lines that subpericranial abscesses and hæmatomata are usually limited to the area of one bone.

The blood vessels of the scalp are subcutaneous, and, when divided, owing to their close connection with the fibrous bands, they are unable to contract. Hence hæmorrhage is often profuse and is not likely to stop spontaneously. The veins of the scalp and skull are of primary importance in the spread of infections to the meninges and brain. If there were no emissary veins, injuries and infections of the scalp would lose half their seriousness. The veins are of three varieties. (1) the superficial, lying in the subcutaneous tissue of the scalp; (2) the diploic, lying between the inner and outer tables of the skull, and communicating by many minute veins with the superficial veins externally and the intracranial sinuses internally; (3) the emissary, which pass through the larger foramina of the skull and establish communication between the veins of the scalp and the intracranial sinuses. It is through these many venous communications that infections of the scalp are carried to the bones of the skull, to the intracranial sinuses, to the meninges, and to the brain.

#### WOUNDS OF THE SCALP.

No wound of the scalp should be regarded as unimportant. Treatment should be prompt and energetic, if dangerous sequelæ are to be prevented; dangerous alike to the patient's life and the practitioner's reputation. Treatment should be directed to (1) stopping hæmorrhage; (2) thorough cleansing and disinfection of the wound, and (3) careful adjustment of the wound edges, with the provision of adequate drainage. An anæsthetic, if the patient is conscious, should be given. It

## TREATMENT OF HEAD INJURIES

and gives no information that is worth the risk of spreading infection. Open up the fracture. Explore it and cleanse and disinfect it. This is readily done with a chisel and mallet in the following way: Apply the chisel, keeping its edge almost parallel with the bone, to one edge of the fracture, and with a blow from the mallet detach a piece of the outer table. Repeat this on the other edge, and so continue along the whole length of the fissure until a trench is made. This will lay bare the diploe and allow of the examination of the inner table. Should this be intact the operation is completed by a thorough disinfection of the exposed diploe and closure of the scalp wound with drainage.

Should the inner table be comminuted, the irregular fragments should be removed carefully. Do not simply raise the fragments and leave them in place. Never try to tear them out or lever them out from one edge. The dura may be torn or the brain compressed or lacerated by such manoeuvres. Seize the fragment transversely about the middle, and raising it gently, separate the underlying dura with a curve elevator or dissector.

If the dura is intact and looks normal, do nothing more. Close the wound, providing adequate drainage. Should the dura be found to be torn and the brain contused or lacerated, or possibly brain tissue, blood clot, and bony debris mixed together, cleanse the cavity carefully, and gently, with small gauze or wool swabs on the end of forceps. Tie any bleeding cortical vessel by passing a ligature on a fine, curved needle underneath it. Do not close the dura. The contused or lacerated brain is possibly infected. The scalp wound is closed with drainage. In cases of compound fracture of the skull, with depressed bone, operation should be undertaken at once, whether focal cerebral symptoms are present or not. The object of the operation is to remove loose fragments of depressed bone and

continued in two to four days, and the stitches removed at the end of five days. Should infection demand it, drainage should be kept up longer, or it may be necessary to provide freer drainage by the removal of some or all of the stitches. The approximation of the edges of the wound by sutures tied tightly and the pressure of the dressings will stop all hæmorrhage unless from main trunks. Should bleeding appear between the sutures it must be controlled by the application of another suture. Large vessels are best and most easily secured by ligating them in continuity a little behind the bleeding point. With an ordinary curved needle carry the ligature under the vessel and tie steadily and firmly. Do not try to tie scalp arteries over forceps. It is ineffectual and a waste of time.

## WOUNDS OF THE SCALP WITH FRACTURE OF THE SKULL. COMPOUND FRACTURE OF THE SKULL

After cleansing and disinfection of the scalp wound as described, a careful examination of the bone, if exposed, should be made. This inspection should be done in a good light and with wide retraction of the scalp wound edges. If a linear fracture is discovered, open up the wound in the direction in which it runs. If the fracture is narrow, with level edges, and the bleeding has stopped, and there are no characteristic cerebral symptoms present, the wound should be closed with drainage. Still regard the case with suspicion and watch carefully for signs of infection or cerebral complications.

In fissured fractures of the outer table always suspect the presence of more extensive damage to the inner table. If the fissure of the outer table is wide, the edges not level, if blood continues to ooze from it, and certainly if hair and dirt are caught in it, the proper course is clear. Do not try to examine the fracture with a probe. It is a dangerous and ineffectual method,

## TREATMENT OF HEAD INJURIES

heading : 1. There are local signs on the surface of the head, but no focal cerebral symptoms. 2. There are local signs and also focal cerebral symptoms. 3. There are no local signs, but there are focal cerebral symptoms.

A careful examination of the head should be made, preferably with the hair cut short, to see if there is any scratch, bruise or other superficial sign of direct injury; also, whether there is any area of depression or evidence of fissure of the skull. The presence or absence of bleeding from the nose or ears should be noted. Excluding depressed fracture, the rule should be: no external wound, no symptoms, no operation. In the presence of a depressed fracture the ideal treatment consists in the exposure of the seat of fracture and the elevation or removal of the depressed fragments. This operation should be performed as soon as it can conveniently be done under favourable operative conditions and environment. This procedure will anticipate the possible development of complications later on.

When symptoms of cerebral compression are associated with local signs of fracture, the cerebral compression is due to one or other, or both, of two factors, viz depressed bone and effused blood. In the presence of a depressed fracture there should be no hesitation as to the course to pursue. Attack the depressed fracture in the manner already described. But if associated with it there is a high degree of intracranial pressure, it is better to perform an ipsilateral subtemporal decompression before proceeding to the elevation of the depressed fracture. This will obviate the danger of the underlying cortex being damaged by its protrusion upward through the fracture opening. When the focal cerebral symptoms correspond to the position of the skull injury, the indications are clear. Not so when there is no correlation between the seat of fracture and the focal symptoms observed, for example, a fracture on the same side as the peripheral

to disinfect the wound. The area of depressed bone is exposed either by enlarging the scalp wound or better by turning down a large flap, which should extend well beyond the depressed fracture. If it is found impossible to raise any of the depressed bone in the manner described, a trephine opening should be made just at the edge of the depressed area. Either through this opening or by enlarging it towards the depressed fracture, the nearest fragment can be elevated and removed.

Hæmorrhage following on the removal of the fragments may come from the diploe, from a meningeal artery, from a sinus, or from a cortical vessel. An attempt should be made to ascertain its exact source, so that it can be dealt with in the way best adapted for each particular place of origin. If from the diploe, plugging with bone wax will suffice. If bone wax is not available, the bleeding can usually be stopped by simply crushing the edges of the bone together with lion or bone forceps. A meningeal artery is best dealt with by passing beneath it a ligature on a fine, curved needle. The same method may be applied to a cortical vessel. Bleeding from a torn sinus may be checked by lateral suture of the tear, if its situation permits. If small, a piece of muscle cut from the inner side of the flap and laid upon the bleeding point will usually be sufficient, and is an excellent method easily applied. Or the cavity may be packed with gauze. This last method is particularly applicable where the source of the hæmorrhage cannot be determined accurately, or when other means have failed to stop it. No operation for compound depressed fracture of the skull should be deemed complete until the depressed fragments have been elevated or removed, the hæmorrhage checked, and the exposed area cleansed and disinfected.

#### SIMPLE FRACTURE OF THE VAULT OF THE SKULL.

Three clinical possibilities are comprised under this

## TREATMENT OF HEAD INJURIES

it, runs the middle meningeal artery. A trephine opening made at this spot and enlarged downwards and forwards will expose the artery, and if ruptured, after the removal of the effused blood and clot, will allow of its trunk being dealt with. In some cases the end of the torn artery can be carefully seized (it tears very easily) with artery forceps and tied in the ordinary way. More often it will be necessary to underrun the artery with a curved needle carrying a ligature. Should the artery have been torn near the base or as it passes through the foramen spinosum, it will be necessary to elevate the temporal lobe of the brain with its dural covering on a suitable spatula and to plug the foramen spinosum either with bone wax or a sterilized wooden plug. It is not safe to rely on a plug of wool or gauze.

Turning again to focal signs due to brain injury, it may be said that the rational treatment of such injuries depends upon the presence or not of a definite increase of the intracranial pressure whether there is a fracture of the skull or not. There are two periods, however, in which an operation is absolutely contra-indicated in cases of brain injury. First, the period of severe shock immediately following the injury, and, second, the final or terminal stage, that of medullary oedema or compression due to greatly increased intracranial pressure, evidenced by a slow pulse, Cheyne-Stokes respiration, and profound unconsciousness.

It should be fully realized that the treatment in head injuries (excluding compound fractures and simple depressed fractures of the skull) should be directed not so much to ascertaining the presence or absence of a fracture of the skull and its location and extent as to combating the effects of the head injury upon the brain.

If the patient is suffering from shock, efforts should be directed toward overcoming the shock by appropriate treatment, namely, warmth by means of heated blankets and hot-water bottles, repeated enemata of

symptoms. The mechanism of contre-coup will explain this condition. What should be the procedure in such a case? It is a sound principle to deal with the local injury first, by attacking the fracture in the method already described. This may obviate the necessity of further interference. If not, it will be necessary to trephine over the cerebral areas affected as indicated by the peripheral symptoms.

In the absence of local signs of injury but with definite focal symptoms, the question of the site of operation must be determined by the nature and localization of the peripheral symptoms. This necessitates some knowledge of crano-cerebral topography. But as Lejars appositely puts it: "Whatever the indications may be, it must be remembered that a trephining is not a mathematical operation, it must always be sufficiently extensive, and must expose endocranial zones, not limited areas." A knowledge of the general relations of the various parts of the underlying brain to the bones of the skull and its sutures is all that is necessary, provided that "endocranial zones, not limited areas," are exposed. In other words, turn down a scalp flap large enough to expose sufficient area of skull surface to be able to recognize exactly the spot where the trephine is being placed, and what bone is being removed by the bone forceps or saw. To illustrate what is meant, cerebral compression as the result of a ruptured middle meningeal artery may be taken as an example. It is presupposed that the relation of the middle meningeal artery to the pterion is known, and that the pterion is that point in the temporal fossa where the frontal, parietal, temporal, and sphenoid bones meet. A large horse-shoe flap, with its base at the zygoma and composed of all the tissues down to the bone, should be turned down to expose the temporal fossa. The pterion will thus be exposed on the surface of the skull. On the cerebral surface of the pterion or very close to

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it, runs the middle meningeal artery. A trephine opening made at this spot and enlarged downwards and forwards will expose the artery, and if ruptured, after the removal of the effused blood and clot, will allow of its trunk being dealt with. In some cases the end of the torn artery can be carefully seized (it tears very easily) with artery forceps and tied in the ordinary way. More often it will be necessary to underrun the artery with a curved needle carrying a ligature. Should the artery have been torn near the base or as it passes through the foramen spinosum, it will be necessary to elevate the temporal lobe of the brain with its dural covering on a suitable spatula and to plug the foramen spinosum either with bone wax or a sterilized wooden plug. It is not safe to rely on a plug of wool or gauze.

Turning again to focal signs due to brain injury, it may be said that the rational treatment of such injuries depends upon the presence or not of a definite increase of the intracranial pressure whether there is a fracture of the skull or not. There are two periods, however, in which an operation is absolutely contra-indicated in cases of brain injury. First, the period of severe shock immediately following the injury, and, second, the final or terminal stage, that of medullary oedema or compression due to greatly increased intracranial pressure, evidenced by a slow pulse, Cheyne-Stokes respiration, and profound unconsciousness.

It should be fully realized that the treatment in head injuries (excluding compound fractures and simple depressed fractures of the skull) should be directed not so much to ascertaining the presence or absence of a fracture of the skull and its location and extent as to combating the effects of the head injury upon the brain.

If the patient is suffering from shock, efforts should be directed toward overcoming the shock by appropriate treatment, namely, warmth by means of heated blankets and hot-water bottles, repeated enemata of



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hot black coffee, absolute quiet, and morphine if necessary to subdue restlessness. The period of severe initial shock rarely lasts longer than twelve hours.

The question of the time for a decompression operation should be decided by the general condition of the patient and the degree of intracranial pressure present. It should not be postponed until the signs of extreme medullary compression appear.

Lumbar puncture should always be done both as a diagnostic and as a therapeutic measure in selected cases. As a diagnostic aid lumbar puncture gives an indication of the pressure of the cerebro-spinal fluid. At the same time some of the fluid can be collected for laboratory examination (Wassermann test, cytological examination, etc.). The presence of blood in the cerebro-spinal fluid is only of importance as an added sign of intracranial injury, and merely denotes bleeding from an intradural vessel, with or without a fracture of the skull. The absence of blood does not exclude an intracranial hæmorrhage, or even a subdural and subarachnoid hæmorrhage. An extradural hæmorrhage of the middle meningeal type will not show blood in the cerebro-spinal fluid. The presence of blood in the cerebro-spinal fluid, therefore, is of no importance when considering the advisability or not of an operation in these cases. The whole question turns upon the presence of a high intracranial pressure.

Lumbar puncture as a therapeutic measure is of value in cases of head injury with a mild degree of intracranial pressure, i.e. in those cases not demanding a decompression operation. Daily repeated removal of 15 to 20 c.cm. of cerebro-spinal fluid gives relief in these cases to headache, nausea, and dizziness, lessens stupor and restlessness, and improves the general condition of the patient. It should not, however, take the place of a decompression operation in cases of greatly increased intracranial tension. Moreover, it is

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associated with a certain amount of danger in such cases by precipitating a medullary compression by direct pressure at the foramen magnum (pressure cone).

The operation undertaken in these cases should be a right-sided subtemporal decompression. It has several advantages due to its anatomical relations. The squamous portion of the temporal bone is the thinnest part of the vault of the skull, and as such the easiest of removal. Its removal exposes the middle meningeal artery. The most important advantage, however, is the fact that the part of the brain lying beneath the decompression opening is the temporo-sphenoidal lobe, a "silent" area of the brain. In addition, it allows of the drainage of the middle fossa of the skull at its lowest point.

The simplest operation is performed by means of a horse-shoe-shaped flap, which is turned down by an incision which commences above and behind the external angular process of the frontal bone, is carried along just below the line of the temporal crest, and, curving downwards, ends just behind the top of the ear. This flap should include everything down to the bone. The skull is trephined over the squamous part of the temporal bone, and the bone of the temporal fossa removed forwards, backwards, and downwards. The dura is then opened, any branches of the middle meningeal artery being secured and ligatured. A drain of rubber tissue, or one half of a split tube, should be inserted along the floor of the middle fossa of the skull between the dura and the brain. The dura is left widely open. The drain should be left in for forty-eight hours or longer as the case demands. The scalp flap is sutured into place by interrupted silkworm gut sutures.

# Uræmia : Past and Present Conceptions.

By H. BATTY SHAW, M.D., F.R.C.P.

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THERE was a time when what was meant by the condition of uræmia—and animal experiments confirmed the belief—was that when urea was increased in the blood, a curious group of symptoms, mainly nervous, arose, directly due to the accumulated blood-urea. When a human subject died from uræmia, not infrequently pericarditis, pleurisy, even peritonitis and cellulitis were discovered. When the animal was experimented on, all sorts of curious disturbances took place, but not at once, and when now we read the description of the condition of the animal when it had succumbed to these curious manifestations, we are astounded that it never occurred to the observers that what they were looking at was largely what we call bacterial infection at the seat of operation or elsewhere in the animal's body. But at the date at which these animal experiments were performed, namely, about 1822, the conception of aseptic operations had not been formulated.

Here and there amongst these earlier experiments examples occurred which showed that the introduction of a large amount of urea into the veins of an animal led to no toxic effects whatever. On the other hand, it was possible to demonstrate in the blood of patients suffering from dropsy and albuminous urine that urea was present in large quantities, but it remained for an Englishman to point out in 1833 the occurrence of fits and sudden death in connection with alleged disease of the kidneys dependent upon alterations in the blood.

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*resulting* from the disease of the kidneys. Some of his actual words were as follows. "The exact change of the blood may require further investigation, but the presence of urea and the deficiency of albumen are those which hitherto attracted the notice of Dr. Prout and Dr. Bright."

The term uræmia was not, however, introduced into medical literature till 1847, when Piorry, a French physician, made use of the term. From that time till quite recent years uræmia has been used to express that toxic state produced by the blood which had become altered by disease of the kidneys, and our text-books tell us of toxic symptoms due to this condition, which are extremely varied in their details. Thus, we have acute uræmia and chronic uræmia, the condition lasting from a few hours to several months; then there is sthenic uræmia, in which the patient is most violent, fit following fit in rapid succession, or mania being so extreme or so dangerous as to require the most potent of our sedatives, certification, etc., or the uræmia is asthenic in type, the patient being merely so weak as to be unable to work, or to be sleepy or so mentally depressed that certification even again is required. Further, uræmia may be characterized by classical epilepsy, by recurrent brief attacks of coma, by extraordinary attacks of dyspnoea coming on especially at night, and making sleep quite impossible, headache and vomiting may be so intense as to suggest meningitis or intracranial tumour, even Jacksonian epilepsy may be seen exquisitely in uræmia, blindness without eye or brain disease may occur and be completely recovered from, or may persist, even deafness, hemiplegia, and monoplegia, accompanied by changes in reflexes suggestive of organic brain disease, may occur, and the central nervous system be found quite normal at post-mortem examination. Symptoms referable to the heart may be shown and bradycardia may be the

only symptom of this curious state; acroparæsthesia is very common, especially at night. Grave disturbances of respiration may easily be referred to diffuse œdema of the lung, which occurs in these cases. The uræmic patient may show very considerable fever, which is explained by the occurrence in uræmia of terminal infections, such as pleurisy, pericarditis, and peritonitis, already referred to, but to the clinician's undoing the terminal infection may take the form of meningitis and endocarditis. Lastly, the breath may become peculiarly offensive from the presence of trymethyamine, and it is often spoken of as uræmic breath; thus, however, is very much akin to the odour met with in pyorrhœa, which suggests another infection, namely, that of the mouth, as being responsible for this phenomenon.

So much for a short sketch of the clinical manifestations of uræmia in the past. As for its causation, I can state from a careful inquiry into the views held by responsible authorities whose statements were published in the following years, 1896, 1904, three in 1915, and one in 1920, that the cause is resident in the kidneys; so that uræmia in the past till within the last few years has been referred to fault in the kidneys, and the symptoms so protean in type are due to one or other of those effects of disease of the kidneys which, as medical students, we learnt to repeat so assiduously: (1) The kidney disease caused accumulation of excreta in the blood which cannot escape through the damaged organ, although each one of these excreta is incapable of being shown to produce these symptoms; (2) or, uræmic symptoms are rather due not to one excretum being retained, for urea, the popular miscreant, even in excessive quantity in the blood cannot cause uræmia—but to the combination of all the excreta, despite the fact that no one has shown that the urine of a normal person or of a so-called uræmic person is toxic to animals; (3) failing these two explanations it was felt

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that uræmia must be due to decomposition of the excreta retained in the blood—but here again none of the disintegration products of urea, creatin, etc., had been shown to be toxic; (4) possibly uræmia may be due in part or entirely to disturbances of the internal secretion of the kidney or to the diversion into the circulation of material derived from disintegration of the kidney cells. This idea cannot be dismissed in the easy way in which the above explanations may be got rid of, because hyperpiesis is present in just those forms of kidney disease in which the cortex and medulla of the kidney, especially the former, are so much destroyed, and renin has been found in the cortex of the kidney, and this substance, renin, in common with pituitrin and adrenalin, is pressor in action. But this theory, though so suggestive, must be dismissed, because we know of patients in whom extremely high blood-pressure exists whose symptoms could not be called uræmic, even with the most comprehensive view of uræmic manifestations, for there may be no symptoms in hyperpiesis.

It must be confessed that we do not know what is the poison, or poisons, causing uræmia, and we do not know where these poisons are manufactured, and we do know now that the most perfect examples of uræmia may occur in individuals in whom at a post-mortem examination the kidneys are normal in appearance to the naked eye, and on histological examination are so little altered that if they had been found in an individual known to be perfectly healthy, and to have died of an accident, they would have been considered to be quite normal.

The term uræmia has now been discussed as conceived in the past, and it looks as if the old conceptions of the cause of uræmia must pass away. The following short account will prove of interest in support of such a view.

A woman cook, æt 52, developed cough, shortness of breath, frequent vomiting and palpitation, then both legs become dropsical,

only symptom of this curious state; aeroparæsthesia is very common, especially at night. Grave disturbances of respiration may easily be referred to diffuse œdema of the lung, which occurs in these cases. The uræmic patient may show very considerable fever, which is explained by the occurrence in uræmia of terminal infections, such as pleurisy, pericarditis, and peritonitis, already referred to, but to the clinician's undoing the terminal infection may take the form of meningitis and endocarditis. Lastly, the breath may become peculiarly offensive from the presence of trimethylamine, and it is often spoken of as uræmic breath, this, however, is very much akin to the odour met with in pyorrhœa, which suggests another infection, namely, that of the mouth, as being responsible for this phenomenon.

So much for a short sketch of the clinical manifestations of uræmia in the past. As for its causation, I can state from a careful inquiry into the views held by responsible authorities whose statements were published in the following years, 1896, 1904, three in 1915, and one in 1920, that the cause is resident in the kidneys; so that uræmia in the past till within the last few years has been referred to fault in the kidneys, and the symptoms so protean in type are due to one or other of those effects of disease of the kidneys which, as medical students, we learnt to repeat so assiduously: (1) The kidney disease caused accumulation of excreta in the blood which cannot escape through the damaged organ, although each one of these excreta is incapable of being shown to produce these symptoms; (2) or, uræmic symptoms are rather due not to one excretum being retained, for urea, the popular miscreant, even in excessive quantity in the blood cannot cause uræmia—but to the combination of all the excreta, despite the fact that no one has shown that the urine of a normal person or of a so-called uræmic person is toxic to animals, (3) failing these two explanations it was felt

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answered—The kidneys may both be out of action and yet uræmia does not occur, so that the contention that uræmia does not depend upon disease or loss of function of the kidney is clearly proved

Now turn to another seat of observations. It is well known since the days of Bright that when dropsy and albuminuria occur in a patient there may be disease of the kidneys. We used to think that we could tell what particular form of kidney disease would be present. But take the case of one patient I can recall :

He was about 18 years of age, and sought medical help because he felt weak and his body had become swollen with dropsy, he was very pale indeed, and his urine showed a heavy cloud of albumen, the urine was not particularly altered in amount, his breath was offensive, and it was impossible to detect any cardiac or vascular disease. He was admitted to hospital, and in a week or so succumbed. It was thought that he had parenchymatous nephritis, and that his kidneys would be of full size and pale and smooth, that the capsule would strip easily, and that the microscope would show glomerulo-tubular degeneration. On the contrary he showed two very small granular pale kidneys.

It is well known that patients may die without showing during life any evidence of kidney disease, and reveal small contracted kidneys at the necropsy without cardiac enlargement or vascular disease.

Another case which must be given in detail will be found of great interest.

A man, aged 42 years, was admitted to hospital in 1922 with the complaint that for seven weeks the legs and the lower part of the body had become swollen, he also had headaches occasionally, was flatulent, and short of breath. He had served in the war, and, beyond catching "influenza" in Egypt in 1918, had never been ill. He was very pale, and showed oedema of the legs and lower body, very marked ascites, and double pleural effusions, he passed about 200 c cm of urine a day, specific gravity 1,030, and it contained 2 per cent of albumen, blood, granular, hyaline, and epithelial casts. The Wassermann test was negative. He did not respond to treatment, which was based upon the assumption that he had parenchymatous nephritis. It was decided to "decapsulate" the right kidney, and at the operation a small piece was removed for microscopic examination. Moderate but only temporary improvement resulted. Some weeks later the left kidney was "decapsulated." Again no permanent relief was given, and the patient died two months after the second operation, and six to seven months



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and she took to her bed. The expectoration was never purulent, but was white and frothy. She was found to have double mitral disease, albumen was found in the urine, a trace to a thick cloud. After a little more than a month her condition improved greatly, and she was able to be up and about in the wards, but in about five weeks dropsy recurred and became so severe that Southey's tubes had to be used. Then she became very short of breath and cyanosed, and had a fit which was described as uræmic, during the next four days these uræmic fits were repeated. At the post-mortem examination of the kidneys only 4 per cent of the Malpighian corpuscles were found to be destroyed, and only in some of the tubes was the epithelium atrophied, the kidneys were congested, and were passed as examples of a cyanotic or cardiac kidney dependent upon the double mitral disease which was found.

It is clear from the consideration of this case that uræmia is not a feature of the recognized primary diseases of the kidneys only, for it may occur when the kidneys are secondarily changed in the final stages of heart disease.

We may now turn to the converse question—When the kidneys are out of action, is uræmia in any of its forms necessarily manifested during life?

We can all recall such a case as the following:—

A man had suffered from renal colic and had passed a stone. Years after he notices that he was passing less and less water until he passed none at all, or only a teaspoonful in twenty-four hours. He feels quite well, but the apprehension of something being radically wrong made him apply for medical relief. He is investigated by cystoscopy and by radiography, and it is found that one ureter discharges no urine at all, and the other, yielding very little or no urine, shows a stone in the ureter. Despite the fact that the man shows no symptoms, it is well known that in seven to eleven days he may suddenly die, and even to the end will reveal no symptoms or signs other than, perhaps, pin-point pupils, lowered temperature, and possibly the slightest of twitches of face or fingers. He is said to be suffering from latent uræmia or urinæmia, that is, uræmia without symptoms, but it would be better to say he is suffering from obstructive suppression of urine. The kidney, which shows no stone, is exposed and incised, and promptly urine begins again to form, and either escapes from the skin wound or, if the stone can be removed, passes along the ureter, and the skin incision heals and the patient recovers.

Clearly in this case one kidney permanently and the other for a time was out of action, but uræmia proper in any of its phases was absent. The question is thus

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when vascular tortuosity and cardiac hypertrophy are well marked, when changes in the fundus oculi are extreme—hæmorrhages, white patches, papillitis, when the toxic manifestations hitherto known as uræmia are present

2 When œdema is an early and persistent and marked sign of the illness, which is a chronic one, when albuminuria is very marked, when there is no vascular tortuosity or cardiac hypertrophy, when changes in the fundus oculi may be absent, or if present, occur in the earlier stages and pass off and are characterized by merely œdematous changes in the retina and optic disc, when uræmia is a very infrequent occurrence, and when it does occur is very slight and occurs early in the disease

It is found that in group (1) the blood-urea may be enormously increased (hyperuræmia) and the urine sodium chloride normal, and that in group (2) the blood-urea is normal and the urine sodium chloride is reduced.

We thus learn that in that particular group in which so-called uræmia is so marked there is hyperuræmia, and in the other group, where dropsy is so marked a feature all through the illness, the excretion of chlorides in the urine is reduced, for they are retained in the body, not in excess in the blood, but in the œdema fluid outside the blood-vessels.

It will thus be seen that old and recent observations have brought us to an *impasse*, for we have had to learn since Bright's day (1) That uræmia may occur and yet the kidneys prove to be normal at the post-mortem, (2) that abrogation of all kidney action may not result in the development of uræmia, (3) that the signs and symptoms of parenchymatous disease of the kidneys, or of granular kidneys, may exist without these conditions being found at the post-mortem examination; (4) that atrophied kidneys (granular kidneys) may exist without the appearance of the signs and symptoms attributed to these states of the kidneys; (5) that hyperuræmia may exist—indeed, often exists—in just those cases in whom uræmic symptoms are common; (6) that a normal amount of urea usually exists in the

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from the onset of the illness, as shown by the occurrence of dropsy the blood urea was 63 milligrams per 100 c cm of blood five days before death. The following were the microscopic appearances of the piece of the right kidney removed during life, and of the two kidneys after death. Section of right kidney removed during life. (1) Localized cloudy swelling and necrosis of the tubules, adjacent areas quite normal, (2) slight chronic changes in the glomerular capsule, (3) proliferation of the epithelium of the glomerular tufts, (4) small effusions of red blood corpuscles. Section of the right and left kidneys removed after death. (1) No localized or general cloudy swelling or necrosis of the tubules, (2) slight thickening of the glomerular capsules; (3) no proliferation of the epithelium of the glomerular tufts, (4) no effusion of red corpuscles.

That is to say, that although during life slight changes, such as are met with very extensively in parenchymatous nephritis, were present, yet at death—which took place two months after the second operation—the symptoms and signs remaining exactly as they were when he was first admitted, all such parenchymatous changes were gone.

It is thus quite clear that the classical symptoms and signs of parenchymatous kidney disease handed down from Bright's day, and firmly believed in by most authorities till within very recent years, can exist without any parenchymatous disease being present at all.

It is at the present day familiar knowledge that the signs and symptoms of granular kidney may exist and yet the kidneys show normal appearances to the naked eye and microscopically. The deduction is easy, that it is not possible to foretell from the clinical signs and symptoms of any individual case what is the physical condition of the kidney, and conversely it is not possible to tell from the physical condition of the kidneys what the clinical picture has been.

The next stage of this discussion brings us to more recent studies of the blood. It is known that the blood in health contains 15 to 45 milligrams of urea for every 100 c cms. of blood, and that the urine contains 1 gramme per cent of chlorides estimated as sodium chloride. The amount of urea in the blood and of chlorides in the urine has been estimated in two distinct groups of cases:—

1. When oedema is absent until the final stages of the illness, which is a chronic one, when albuminuria is very slight or moderate,

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when vascular tortuosity and cardiac hypertrophy are well marked, when changes in the fundus oculi are extreme—hæmorrhages, white patches, papillitis, when the toxic manifestations hitherto known as uræmia are present

2 When œdema is an early and persistent and marked sign of the illness, which is a chronic one, when albuminuria is very marked, when there is no vascular tortuosity or cardiac hypertrophy, when changes in the fundus oculi may be absent, or if present, occur in the earlier stages and pass off and are characterized by merely cedematous changes in the retina and optic disc, when uræmia is a very infrequent occurrence, and when it does occur is very slight and occurs early in the disease

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It will thus be seen that old and recent observations have brought us to an *impasse*, for we have had to learn since Bright's day (1) That uræmia may occur and yet the kidneys prove to be normal at the post-mortem; (2) that abrogation of all kidney action may not result in the development of uræmia, (3) that the signs and symptoms of parenchymatous disease of the kidneys, or of granular kidneys, may exist without these conditions being found at the post-mortem examination; (4) that atrophied kidneys (granular kidneys) may exist without the appearance of the signs and symptoms attributed to these states of the kidneys, (5) that hyperuræmia may exist—indeed, often exists—in just those cases in whom uræmic symptoms are common; (6) that a normal amount of urea usually exists in the

blood of those cases in whom the symptoms of uræmia are absent or slight: (7) that it is established clinically and experimentally that hyperuræmia, even of extraordinary degree, will not *per se* give rise to symptoms of uræmia.

My purpose in writing this paper is (1) to provide an escape from the *impasse*; and (2) to provide a clinical means of escape:—

(a) It is probable that the symptoms and signs usually ascribed to parenchymatous and interstitial nephritis are not due to the kidney disease but to blood poisons, the nature of which and the site of production of which are at present unknown. Suppression of urine is a sign in these cases which, however, may be referred to the kidney disease.

(b) In order to explain why urea is retained in excess in the blood in the first group above described, and to explain why chlorides are reduced in the urine, it does not seem necessary to hypothecate a purely functional disturbance of the kidney. We may be content to say that in both these groups of cases there is a condition of the blood which leads to a hold-up of urea in the blood in the first group, and to the development of dropsy in the second group, the dropsical fluid being associated with a hold-up of the chlorides outside the blood-vessels. We have good reason for this view, for we know that in pneumonia there is a great hold-up of chlorides in the body, and the same thing occurs in other infections.

There are two clinical observations which obviate all need for estimations of blood-urea and urine-chloride in the laboratory differentiation of the above two sets of clinical disorders, which hitherto we have spoken of respectively as interstitial and parenchymatous nephritis. In the former state, which may not be accompanied by any changes in the kidney, hyperpiæsis is present, and if absent—as it may be towards the end of life—the hall-mark of hyperpiæsis, namely, cardiac hyper-

trophy, will be found possibly at the bed-side and certainly in the dead-house. Dropsy will be absent except in the terminal stages.

In the latter state, which also may not be accompanied by any changes in the kidney, dropsy is always present, and quite early, and hyperpiesis, including its hall-mark cardiac hypertrophy, will be absent

It would be well to describe the symptoms met with in so-called uræmia as hyperpiesic toxæmia, a term which is non-committal so far as deciding the actual cause of this state, and recognizes that hyperpiesis is of toxic origin and not merely due to partial or complete occlusion of blood-vessels by endarteritis. Thus the present conception that uræmia is a toxic state due to excess of urea or any other known excretion of the kidneys is wrong; the condition is due to a poison or poisons present in the blood, and these poisons though quite unknown at present are not of renal origin, the clinical indicator of this state is hyperpiesis, and we may dispense with the laboratory indicator, namely, hyperuræmia.

Practical treatment to be satisfactory, if it is possible at all, must depend upon our conceptions of fundamental causes. In cases of chronic dropsy, marked albuminuria and normal blood-pressure, do not cut proteids out so rigorously as formerly, but give proteids as well as carbohydrate foods, reduce the intake of common salt completely; treat symptoms; use diuretics, including urea, 30 or more grammes a day; employ hot-air baths, and relieve severe dropsy by Southey's tubes or incisions.

In the other type of cases of slight dropsy or none, slight albuminuria and high blood-pressure (the hyperpiesic type) do not cut down the proteins of the diet, increase the physical rest; carry out symptomatic treatment for headache, insomnia, etc., and do venesection or vene-puncture to the extent of 15 to 20 ounces in an adult for the manifestations of hyperpiesic toxæmia, and if this fails to relieve fits carry out spinal puncture

# Rheumatism and Chronic Infective Toxic States in Children.

By C PAGET LAPAGE, M D , F R C P

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**C**HRONIC infections arise from localized foci from which toxins circulate to give rise to the various signs and symptoms of the chronic toxic state. Thus chronic localized rheumatic tonsillitis will cause a chronic rheumatic toxic state, just as a chronic localized tuberculous adenitis will cause a chronic tuberculous state. All these infections give rise to certain symptoms and signs which are, in the main, similar, but may differ with the nature of the toxin.

It is noteworthy that some infections resemble each other in the nature of their manifestations. For instance, rheumatism, scarlet fever, and other streptococcal infections are alike in their tendency to erythemata, to rashes, and to joint affections. The influenza and diphtheritic toxins are alike in the long-lasting actions, and their special predilection for the nervous tissues, and for causing loss of tone. The tuberculous toxin acts more slowly in giving rise to a state of loss of tone, headaches, depression, and general debility.

The word rheumatism and the prefix rheumatic are much too frequently seen and heard at present. This is because they may be used to describe some acute or chronic infection, which, in reality, is

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due to an infective agent of quite a different nature from that of true rheumatism. This cloaking of a disease or condition under a convenient, but loosely-used name, leads to much that is slovenly in diagnosis and treatment.

In chronic rheumatism the distinctive features are endocarditis, chorea, nodules under the skin, usually with chronic tonsillitis and bowel trouble. There are, of course, many other manifestations of this toxæmia, but they occur equally often in other infections. Thus growing pains, though they may be very common in rheumatism, also occur in other toxic states.

Another confusion arises because metabolic disorders as well as infective states may be labelled as rheumatic.

### CLASSIFICATION.

We can make the following classification of the more chronic infections :

|                                                              |   |                  |
|--------------------------------------------------------------|---|------------------|
| Chronic<br>Toxic<br>States<br>from<br>Localized<br>Infection | { | Tuberculotoxic   |
|                                                              |   | Staphylococcal   |
|                                                              |   | Streptococcal    |
|                                                              |   | Rheumatococcal   |
|                                                              |   | Meningococcal    |
|                                                              |   | Catarrhococcal   |
|                                                              |   | Influenzococcal  |
|                                                              |   | Diphtherococcal  |
|                                                              |   | Gonococcal       |
|                                                              |   | Colibacillary    |
|                                                              |   | Typhococcal, etc |

The signs and symptoms of the chronic toxic states can be summarized as follows.

*Skin*—Pallor, loss of tone, giving a dry, dirty-dough appearance, venous stasis, nodules.

*Muscles, Bones, Joints*—Loss of tone of muscles and ligaments with resulting scoliosis, flat foot and other deformities, fibrositis or joint troubles, growing pains, pleurodynia, neuralgia, etc

*Digestive System*—Tongue furred, appetite bad, constipation, lowered digestive power, atony of bowel,



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tendency to catarrh.

*Respiratory System.*—Nasopharyngeal catarrh, bronchitis, bronchial adenitis.

*Circulatory System*—Loss of tone of blood vessels, pallor, affection of sympathetic system, and disturbances of circulatory control reacting adversely on nervous state, endocarditis, pericarditis, or loss of cardiac tone only.

*Blood and Ductless System.*—Thyroid gland may enlarge in its efforts to combat the toxæmia. Other endocrine gland disorders are likely.

*Nervous System.*—Headaches, irritability, moodiness, neuasthenia, depression. Chorea, other disorders such as tic in its various forms of eye-blinking, face-twitching, and constant clearing of the throat.

The following are a number of illustrative cases:

*Rheumatologic*—Case 1—Boy, æt 8. Tired, sleeping badly, pallid, short of breath, attacks of joint pains and feverishness. Attacks ushered in by sore throat. Tonsils enlarged. Heart enlarged, and a mitral systolic bruit present. Rheumatism diagnosed. Treatment rest and sodium salicylate. Bed one month, then sent to mild climate for some months. Three months later sudden crop of septic spots and septic finger, and then on return home a fresh attack of rheumatism. Sodium salicylate given. A swab from the next attack of tonsillitis showed a streptococcal organism (rheumatic). Vaccine treatment resulted in complete cure.

*Streptologic*—Case 2—J. H., boy, æt 6. Nine months ago he had acute rheumatism with anæmia. Six months ago he had another attack. He was debilitated and showed marked loss of appetite. He had definite nodules on the little fingers, on the scalp, and on the posterior border of the scapula, and was a typical case of "chronic rheumatism," with pains and a suspicion of chronic paresis on the left side. He was kept under observation to see if a focus of infection could be found, the tonsils were not much enlarged. He suddenly developed a gumboil, and a swab taken from it showed streptococci. A vaccine was prepared and given in doses of 50, 100, 125, 150, and then 200 millions. He improved at once, the nodules cleared up, and the pains disappeared.

*Catarrhologic, (?) Diphtherologic*—Case 3. V. S., boy, æt 10. Pain in the abdomen three weeks before, stiff neck, bad cough. Toxæmia, dragged legs, and shoulders were limp. Food had been coming down the nose, and his speech had been affected. There was a diffuse apex beat and a systolic bruit. He had some nasal douchings,

## RHEUMATISM IN CHILDREN

and a swab showed *Micrococcus catarrhalis*. He was much improved by the vaccine.

*Streptotoxic*—Case 4—G Y, boy, æt 5. Subacute septico arthritis in both knees. Eight weeks' pain in both knees, not able to walk. Both knees a little swollen, tender. Sent to dentist. Since there were no throat troubles, a swab was taken from the gums where there appeared to be pyorrhœa. A streptococcus was found. Vaccine treatment caused great improvement, and he walked two days after the first injection.

*Tuberculotoxic*—Case 5—N B, girl, æt 11. Attending because she had debility and nasal catarrh and facial tic after influenza. She had been delicate since scarlet fever seven years previously. Thin, chest flat, scoliosis and general loss of tone with flat-foot, etc. Heart irritable and first sound impaired. The chest was doubtful at the bases and roots of the lungs. X-ray confirmed this. After a month of general treatment she proved to be a case of tuberculosis, and made a good recovery in a sanatorium. In this case the initial toxic state was probably influenzal, and the tuberculous toxic state a sequel.

*Tuberculotoxic*—Cases 6 and 7—Two children, F G, æt 10, and H G, æt 13. Both in a debilitated state from chronic glandular tuberculosis. Under general and medical treatment for several years with little improvement. Cough, debility, pallor, thinness, and other signs of tuberculous toxæmia.

F G given an initial dose of 1/50,000 of K.N.T.R., followed by nine doses of 1/25,000 at weekly intervals. Gained five lbs after the injections were over. The mother noticed improvement in vigour, colour and cough. H G given 1/100,000 as initial dose, then 1/25,000 ten times at weekly intervals. Gained seven lbs, and reported as much better in every way.

*Rheumotoxic*—Case 8—I R, boy, æt 10. History, high fever and coated tongue, pain in hands at night, no other signs. Four weeks later, pains in wrists and crop of nodules on knuckles, patella, and parietal bones, no fever and no heart affections. Shortly afterwards rheumatic fever developed followed by endocarditis. When first seen he had a marked mitral lesion, and was a typical bedridden case of mitral disease from rheumatism, with recurrent attacks of feverishness, large subcutaneous nodules (those on the scalp being the size of a halfpenny). There was continuous poisoning of the heart, and consequently no effective attempt at compensation. He was pallid and evidently toxic. The recurrent attacks of sore throat were the probable source of the trouble. At first, treatment by rest in bed, by salicylates and by removal to a dry climate was tried, but, though he was better when in the dry climate, he was still liable to fresh attacks, and could not keep free from them in the damp town climate. It was therefore decided to remove the tonsils in spite of the severe heart lesion. The results of this were very good indeed, and the attacks of sore throat did not recur even in a damp climate. The nodules disappeared at once, though they had been present for a long time. The colour began to improve,

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and there was a marked change in muscular tone (this took place although the boy was absolutely at rest) Now, three years after, his heart is in the nipple line. There is still a marked limit to activity, but compensation is well on the way, and he is (five years from the first illness) going to school.

Case 8 shows very well the marked improvement which followed the removal of the infective focus. At once the signs of the chronic toxic state, recurrent feverish attacks, nodules, progressive mitral disease, "growing pains," dyspepsia, general loss of tone, pallor, irritability, etc., all disappeared. Not all foci can be so successfully dealt with, but the outstanding lesson to be learnt from most cases is that before we can hope to make much improvement we must deal successfully with the focus, either by removal, as in case 8, or by fibrosis and shutting away, as in cases 2, 3, 4, 5, 6, and 7.

### TREATMENT.

This can be briefly summarized under three headings: (1) curative; (2) palliative, and (3) preventive.

(1) **CURATIVE.**—Remove or deal with, or encourage, Nature to deal with the focus of infection. Foci of infection and methods of dealing with them are as follows:

(a) *Tonsils* are a very common focus, and wherever possible should be enucleated. They may be a nidus for many different organisms, and give rise to various toxic states, streptotoxic, catarrhotoxic, diphtherotoxic, and (through cervical adenitis) tuberculotoxic.

(b) *Nasopharyngeal infection*, with or without tonsils. Catarrh is often a symptom in chronic toxæmia. Adenitis of the posterior cervical groups is often present. Operation is essential if vegetations are found. Properly conducted nasal hygiene may be of use, but more often attention to the general health limits the catarrh, which is a symptom and not a cause.

(c) *Teeth and gum conditions* can be dealt with as indicated.

## RHEUMATISM IN CHILDREN

(d) *Bowel infections* of a chronic nature are frequent sources of chronic toxic states. This focus may be difficult to deal with. If there should be a chronic appendix or any other removable focus the short cut to cure is quickly made by operation; but very often there is a chronic infection of the mucous membrane which does not react to treatment, or at least recurs very readily. A diet with plenty of fresh food, meat, chicken, fish, or other proteids and avoidance of residue-producing foods is important. Milk often does harm by producing curds and constipation. It must be remembered that the bowel is suffering from loss of tone, and the digestive power is lowered.

(e) *Pyelitis* may be an obscure source of a chronic toxic state

(f) *Vulvo-vaginitis* is not very uncommon even in young girls. Diphtheroid or other organisms may be present and give a toxic effect.

(g) *Bronchiectasis* or other non-tuberculous conditions of stasis in the chest may, if infected, give a toxic state, and persistent measures taken to keep the cavities clear may have surprising results.

(h) *Chronic ear infection.*

(i) *Abscesses or septic troubles of the bone or skin* may be the source, but are more often a sign of a focus elsewhere.

(j) *Infected lymphatic glands* are important possible foci for the chronic toxic state, especially in tuberculosis. Cases 6 and 7 illustrate the point. To deal with such foci, either removal, or promotion of fibrosis, is necessary. Accessible glands can be removed if the patient is in a suitable state of health to prevent recurrence, but many, such as bronchial and mesenteric, are inaccessible. Tuberculin injections may do good, but must be given with care, and only by those experienced in their use. They often cause the focus to break

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## RHEUMATISM IN CHILDREN

which is in a state of lowered tone and may be labouring against a valvular lesion.

(3) PREVENTIVE.—Remove lowering agencies and prevent infections. Lowering agents are: dampness, irritating atmospheres, bad food, deficient sleep, draughts, and exposure. The relation of "rheumatism" to damp is well known.

It has been pointed out that rheumatism may be much worse in towns and in areas close to rivers. Camps and school-treats may give rise to rheumatism.

But are not these the places where lowering conditions and crowding produce a state suitable for infection, and where opportunity for infection is rife? Often the infection is latent, and the lowering condition lights it up.

A gastro-intestinal origin of the infection is not uncommon, and diet plays an important part on the body's efficiency and state of resistance. A diet rich in sugar and low in fresh foods and vitamins is a weakening factor. What proportion of children nowadays eat fresh green food like watercress? Many of the districts of towns and villages are eminently suited to propagate chronic infections by lowering the health. Bad hygiene, badly-chosen food, and life in airless, crowded areas all play their part, and, finally, the present-day life of the child, with schools, trams, cinemas, etc., gives much more opportunity for infection than formerly.

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down, and so are not suitable for inaccessible glands; neither are they suitable for acute or ulcerative lesions. To promote fibrosis rest is of first importance, combined with food, sunlight or artificial light, and open air. Creosote and cod-liver oil are useful adjuncts.

(2) **PALLIATIVE.**—Sodium salicylate is useful to relieve and control feverish attacks and toxic pains. Moderate doses are best, grs. v to viii, three times a day, given with an alkali. *Cimicifuga* is also a useful remedy for pains like pleurodynia.

Attention to the diet and to the bowels and excretory system is of very great importance. Advice to avoid a proteid diet (meat, fish, eggs) is often given in "rheumatism," but in many cases it suits much better than milk, and is not so constipating.

Favourable climate is of value because there is less liability to lowering conditions and to throat trouble, but the aim of treatment should be to make the child independent of climate as far as possible. Artificial light treatment is of great value in chronic infections.

As there is a chronic and recurrent poisoning, rest is necessary. It is impossible to exaggerate the importance of rest in these cases in which one is trying to promote fibrosis and shutting away of a focus, such as a tuberculous bronchial gland. Exertion promotes blood flow, and probably sends a fresh dose of toxin through the system; rest, therefore, acts chiefly by preventing a greater degree of toxæmia, a most important help to Nature's process of recovery, i.e. fibrosis.

One often hears it said that the child will become flabby and weak if kept in bed, but it is not want of exercise that makes it flabby, it is toxæmia. Rest, even of long duration, may, if the toxæmia is removed, be accompanied by great increase of muscle tone and vigour and strength even in unused limbs. Rest also, of course, prevents strain on an organ like the heart,

bed every afternoon, especially if there is any tendency towards varicose veins. The bowels must be opened daily, and gentle opening medicine taken towards this end if necessary. The inconveniences of pregnancy will be greatly lessened or relieved by such simple hygienic measures. It would, therefore, appear reasonable to expect that any doctor engaged for the confinement should take an opportunity of discussing them, as well as concentrate on the observation of symptoms from the point of view of the possible occurrence of toxæmia, on the treatment of anæmia, or other morbid condition which may be present.

The mother's state of mind during the latter days of pregnancy is of the greatest possible importance. She should be spared all worry and mental anxiety, so far as may be possible. The doctor's attitude must be sympathetic, but none the less bracing. On no account must she be allowed to become downhearted or morbid. The co-operation of the husband, in this respect particularly, may be of the greatest possible assistance.

The care and preparation of the breasts should begin at least two months before the birth of the child. They should be bathed daily with cold water and dried with a rough towel, rubbing gently towards the nipple. Attention to the nipples is of very great importance, especially in days when they tend to become flattened and depressed on account of tight bust bodices worn to produce the fashionable flat figure. The nipples may be manipulated with a little olive oil or lanoline. The nipple should be grasped between two fingers of the left hand and with the right the surrounding flesh is pressed back gently, so causing elevation of the nipple. A small rubber ring, such as an umbrella ring, surrounding the nipple may sometimes be worn with advantage under the clothing. On no account should spirit be applied to the nipples; this dries and hardens them,



# The Technique of Breast Feeding.

By AMY HODGSON, M D, M R C P, D P H

*Registrar, The Infants' Hospital, London, late Assistant Medical Officer of Health, Huddersfield*

THE successful management of breast-feeding, where mother and child are ordinarily healthy, depends mainly on two factors, namely, (1) the mother's attitude (towards the infant, and the object in question); and (2) the regular stimulation of the mother's breasts in the act of feeding. Steady perseverance is needed throughout. There are further many points, attention to which should ensure success where otherwise failure would be likely.

In this article I deal with the subject under three headings :

- (1) The successful establishment of breast-feeding.
- (2) The successful maintenance of breast-feeding.
- (3) Restoration where the supply of milk has failed or is failing.

## ESTABLISHMENT OF BREAST-FEEDING.

The care directed to this end belongs chiefly to the ante-natal period. The expectant mother should give special attention to the details of personal hygiene on which her own health and that of the child to be so much depend. Food should be simple and good, but not abnormally large in amount. Plenty of fruit and vegetables should be taken, and any article which at any time appears liable to produce indigestion should be omitted from the diet. A daily walk should be taken, and the normal exercise so far as may be possible, at least eight hours sleep, and a short rest on the

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bed every afternoon, especially if there is any tendency towards varicose veins. The bowels must be opened daily, and gentle opening medicine taken towards this end if necessary. The inconveniences of pregnancy will be greatly lessened or relieved by such simple hygienic measures. It would, therefore, appear reasonable to expect that any doctor engaged for the confinement should take an opportunity of discussing them, as well as concentrate on the observation of symptoms from the point of view of the possible occurrence of toxæmia, on the treatment of anæmia, or other morbid condition which may be present.

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and so tends to produce cracking. Glycerine also has a dehydrating action, but is not infrequently useful in combination with olive oil. One authority recommends the systematic scrubbing of the nipples with a soft brush and soap and water. This treatment is doubtless excellent, but appears too drastic to be adopted by the average person with any degree of alacrity.

The important point is that at the birth of the child there should be a suitable nipple ready prepared for him, so that he may be put at once to the breast with reasonable hope of success. The milk does not "come in," as a rule, until about the third day, but a nutrient fluid, known as colostrum, is present from birth. The child should be put at regular intervals to the breast from the very first, four-hourly intervals are probably best for the normal healthy infant—five feeds in the day, but no night feeds. I advise three-hourly feeding in the case of premature or weakly infants, with or without one night feed, making up a total of either six or seven feeds in all. The old-fashioned feeding of infants at two-hourly or at two-and-a-half-hourly intervals is certainly a mistake, both from the point of view of the child's digestion and the mother's strength. Over-stimulation of the breasts with fatigue to the mother is a fatal mistake. The child should sleep in his own cot from the very beginning. It is less easy to begin night-feeding if he is nowhere in the mother's vicinity at nights. He must on no account be picked up and nursed to sleep. The importance of a good night's rest to the mother at this stage cannot be over-estimated.

In the first instance, and until the flow of milk is well established, the child should be put to both breasts at every time of nursing for two or three minutes each. He will gain nothing by sucking longer, and will merely become "windy." Whether or no he should take one

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or two breasts at a single feed subsequently should be determined by the supply of milk. With a normal and adequate amount it is probably best to give one breast only at each nursing. As the milk becomes richer (as regards fat) with the period of the feed, it is always better to completely empty one breast and to give a little from the other as may be needed.

Over-distended and congested breasts can always be relieved with a pump, or by expressing a small quantity of the milk into a cup. On no account, to relieve this condition, should the baby be put to the breast during the night. Sometimes the breasts tend to become engorged with the coming in of the milk. Support the breasts, lessen the amount of fluid taken by the mother, and put the child regularly, as before, to the breast. Hot fomentations (with a hole cut to avoid the nipple) are often extremely useful.

In the first instance the mother's position in feeding will be lying on one side, with the child supported on one arm, and the breast of that side allowed to drop over towards him. She will, however, be more comfortable, and the child will feed more satisfactorily, as soon as she is able to sit up in bed with support, and nurse the child in her arms. My own belief is that this position, which also promotes drainage of the lochia, is beneficial to the mother, and should be allowed at least as soon as she seems able and inclined to adopt it.

Difficulties which are apt to occur at this stage are chiefly mechanical, due to anything which interferes with the adequate stimulation of strong suction on the part of either child or mother. Depressed nipples have already been referred to as a not uncommon cause of failure. On the other hand, a weakly infant is unable to attack the breast with sufficient vigour to stimulate successfully the flow of milk. Sheer lack of vitality is thus the most frequent cause of failure due to the infant. Efficient suction may, however, also be prevented by

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## BREAST FEEDING

tion to the details of management which have already been described.

It may be not uninteresting to examine at this stage tables which have been prepared, giving various reasons for which babies are weaned during the early months of life.

Dr Helen Campbell, of Bradford, has published the following figures for a series of 5,936 infants, the reasons being allocated as follows (on information given by the mother):

|                           | Per cent |
|---------------------------|----------|
| Failure of breast milk    | 65 19    |
| No breast milk secreted   | 5 79     |
| Defective nipples         | 4 53     |
| Only one breast secreting | 1 84     |
| Mammary abscess           | 3 30     |
| Baby's illness            | 2 21     |
| Milk disagreeing          | 3 12     |
| Mother went out to work   | 4 40     |
| Mother's illness          | 7 45     |
| Mother's death            | 0 84     |
| Child refused breast      | 0 15     |
| Other reasons             | 1 01     |

Dr. Ella Webb has collected a series of 200 cases—probably, owing to lower numbers, from more personal knowledge—not greatly different from the above, but she puts the cases of insufficient milk rather lower—46 per cent only:

|                                                                                     | Per cent |
|-------------------------------------------------------------------------------------|----------|
| Insufficient milk                                                                   | 46 5     |
| Illness of mother                                                                   | 17 5     |
| Disagreement of milk with infants                                                   | 11 0     |
| Sore breasts                                                                        | 8 0      |
| Mother going out to work                                                            | 6 5      |
| Advised by nurse or friend to wean                                                  | 4 0      |
| Child refusing breast                                                               | 2 5      |
| Death of mother                                                                     | 3 0      |
| Hare lip                                                                            | 0 5      |
| Accidental illness of child causing great fatigue to mother through watchful nights | 0 5      |

In a series of 150 cases weaned under six months of age collected by myself in Huddersfield, with exact personal knowledge of the individual case, the results

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malformation of the suction apparatus, as in hare-lip or cleft palate, or follow as the result of nasal obstruction, whether due, as commonly, to catarrh or snuffles, or on occasion to awkward management on the part of the mother, when the infant's nose is allowed to become buried in the mother's breast during the act of feeding.

If the infant is too feeble to provide the necessary stimulation or there is any such mechanical difficulty, the milk must be drawn off with a pump or expressed (at regular intervals of nursing), and given to the child with spoon, bottle, pipette or premature feeder, as may be necessary. Special forms of pipette can now be obtained, or readily home-manufactured, in which a teat is fixed at the lower end, and the child is able to help himself as well as to be helped. I have found these feeders most successful in this type of case. With regard to "method of milking," I have found expression preferable to the use of the pump from the point of view of the mother, and more efficient. Expression may be done by a nurse or medical attendant, but is practised usually with less discomfort and more interest and confidence by the mother herself. The breast is grasped between the thumb (above) and the fingers supporting the breast, or the breast may be supported with one hand, and milked between the fingers and thumb of the other. A milking movement is made involving gentle pressure and a slight forward pull. This movement has been described in combination as back-down-and-out. With a little practice the movement becomes easy. An expert can express the milk with sufficient power to squirt it to a distance of several feet.

### MAINTENANCE OF BREAST-FEEDING.

Breast-feeding is maintained along the lines of establishment, by a steady faith and persistent atten-

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weaning supervened during the attendance of doctor or midwife, in a number of cases some event, such as serious illness of the mother, rendered the step advisable or even necessary. As many as 13 per cent were, however, weaned by doctors during this period, and 9 per cent. by midwives, for the sole reason that the breast-milk appeared insufficient. In a proportion of these cases the mother's health was not entirely good. There would appear, however, to be evidence that the possibilities of help are insufficiently understood, and especially that the technique of breast-feeding is insufficiently studied, and so considered uninteresting or unimportant. This fact in itself forms apologia enough for this article. It is not without further significance, in fixing the responsibility, that of the mothers in whom failure occurred, 66 per cent. were young women (under 30), 46 per cent. were mothers with their first baby, and in at least 48 per cent of cases the mother's health was excellent.

It is now generally recognized that psychological factors are of tremendous importance in the achievement of one special object. Many people go so far as to say that a woman who is really anxious to feed her baby can invariably do so. I do not believe this to be the case. But I recognize that on the attitude of the mother throughout nursing a great deal depends. In a number of cases in my series there was for a time at least some difficulty, the mother failed to receive the necessary help and encouragement, lost heart, and did not persevere. Individual factors came into operation, as in the following—the mother had no special faith in breast-feeding, and was inclined to think her milk was “too poor” for the child—one woman, whose own mother had “reared twelve” successfully on the bottle, found it impossible to believe that any member of the family was able to breast-feed a baby, or that there was any special advantage in so doing. Another woman



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tally very generally with Dr. Campbell's figures:

|                                    | Per cent |
|------------------------------------|----------|
| No breast-milk secreted - - - - -  | 2 6      |
| Failure of breast-milk - - - - -   | 61·3     |
| Defective supplies - - - - -       | 6 6      |
| Mammary abscess - - - - -          | 5 3      |
| Baby's illness - - - - -           | 3 3      |
| Milk disagreeing - - - - -         | 2 0      |
| Mother going out to work - - - - - | 4 0      |
| Mother's illness - - - - -         | 11 3     |
| Mother's death - - - - -           | 1 3      |
| Child refusing breast - - - - -    | 2 0      |

It is not without interest that of these, 73 per cent were weaned at some time during the first month of life, so that it would appear, generally speaking, that provided a child can be successfully breast-fed to the end of the first month—success subsequently is fairly assured.

The cases weaned during the first month tend to fall naturally into three groups:

1. Those weaned at birth, 18 per cent.
2. Those weaned later, during attendance of doctor or midwife, 15 per cent.
3. Later, during the month, 32 per cent.

It is notorious that the latter half of the first month, when the mother takes over her usual responsibilities and has to dispense with special help, is a difficult time in all cases. Over and over again are we faced with the old story "My milk went when I got up." It is noteworthy that one-third of my cases were in difficult financial circumstances, and that in an almost equal number the mother was without domestic help of any description, and got up to arrears of housework for which at the time she was not in a fit state of health. The difficulty and depression of these circumstances would be heightened when she became dependent on herself entirely for the regulation of her own hygiene and that of the baby. Of the 33 per cent. of cases in which lactation failed to be established, or in which

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greedily.

Contrary to the general belief the quality as opposed to the quantity of milk is rarely at fault, and there is usually very little information to be derived in a difficult case from a chemical analysis. The fat content, of course, increases throughout the period of the feed, the "strippings," or last milk, being the richest. Bacteriological examinations made by myself at the Infants' Hospital go to show that breast-milk is rarely sterile, but contains a variety of bacteria, of which gram-positive cocci are most constantly present. The fable of the "sterility" of breast-milk has been shown previously by the work of Cohn and Neumann in Germany, as well as by Marfan in France, and by Dudgeon and Jewesbury in this country. Marfan finds breast-milk sterile in one out of twenty cases only. It seems probable that in conditions of ill-health substances of a toxic character may be excreted in the milk, and so it may become definitely poisonous to the infant. I have only once weaned an infant on these grounds alone, where there was persistent failure to gain, the supply of milk, as estimated by test feed, being adequate and suitable. An immediate improvement occurred in this particular case. These cases, however, are rare, and it is wise to note that the contrary result is usual when this step is taken on account of symptoms of dyspepsia in the infant—commonly due to overfeeding. Many examples of the "fatal" results of weaning could be given from cases on the books of the Infants' Hospital.

### RESTORATION OF BREAST-MILK.

It remains to consider our available resources when it becomes obvious that the breast-milk is failing, or when failure is reported to have actually taken place.

It may be suitable to call attention here to the

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definitely did not wish for a child at all; on the arrival of twins her dismay rendered her totally inadequate to the occasion, and both babies were bottle-fed. One was not infrequently confronted with mothers who, having seen the advertisements of some dried milk or patent food, or, perhaps, seen a neighbour's child thriving thereon apparently better than their own on the breast, had weaned the child in order to give the food in question—often with dismal results.

If the child was not weaned immediately the commonly fatal "odd bottles" were given. The supply of breast-milk gradually diminished through absence of stimulation. Many nurses (often of a good type) still give "odd bottles," with the idea of freeing the mother a little for entertainment or social duty. It cannot too strongly be emphasized that the chances of breast-feeding are thus endangered, and that failure in many cases has been due to this cause alone.

Six per cent. only of the cases in my own series came to be weaned on the ground that the breast-milk was disagreeing with the baby. I formed the conclusion that the supply of milk in these cases was *more* than adequate (in certain cases oozing through the clothes between feeds), and that the upset was due to over-feeding, giving rise to the characteristic symptoms, vomiting and diarrhoea, as well as to unusually large "gains" associated with colic, restlessness, and screaming. When one was able to deal with the cases in time, success consistently followed suitable treatment. This treatment may be briefly indicated as follows.

1. Lengthen intervals of feeding, four-hourly is best.
2. Limit the time at the breast (amount taken to be regulated by test feed. N.B.—I have known 6 ounces taken in three minutes, to the absolute amazement of the mother).

3. Give water *before* feeds, so that the child takes less

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will be needed for normal body purposes. Apart from this, I believe there is a very general tendency among women to drink less than men, and frequently too little for health. A woman requiring an extra quantity, especially if engaged at home, is very apt to get her mind upon other matters and so forget to drink at suitable intervals, unless a special point is made of her doing so. If a full amount of food is being taken, water is undoubtedly the best beverage. Milk and other nutrient fluids not habitually taken are apt to upset the digestion or to cause constipation. A tumbler of water may be taken at stated intervals; the best plan is to let it be sipped before or during feeding, each time the child is put to the breast.

The English public is not yet educated to recovery by hygienic measures only, and the "bottle" of medicine and the so-called galactagogues on the market may be classed together as placebos at times essential to success. I believe apparent evidence of the value of certain of the latter to be produced solely by the psychological effect on the mother of their use. Where, however, the supply of food has been deficient the value of suitable nutrient fluids in which they may be taken is very great—as, indeed, has been evidenced in the results of grants of milk made to nursing mothers under the maternity and child welfare schemes.

*Local treatment* is directed towards an increase in vascularity locally, and designed to stimulate the activity of the gland.

The following measures are those usually employed:

(a) *Hot and Cold Bathing*—This may be practised at suitable intervals (two or three times in the day), between feeds. Two basins are filled, one with hot and one with cold water. The breast is supported with one hand, and cloths wrung out of hot and cold water are applied turn and turn about, until the hot water is cool. The breast is then rubbed down with a rough

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value of the test feed in coming to a decision on this particular point. The method is without doubt extremely useful, especially if it is found possible to take estimations over a whole day. A single test-feed may be quite valueless, as usually more milk is secreted in the morning than in the afternoon. Children, too, tend to feed differently at different times, and so no absolute criterion can be taken. A child in strange surroundings, as in the out-patient department of a hospital, is apt to feed badly—especially if, as is sometimes seen, it is allowed to remain undressed for the purpose. The technique of a test feed as practised at the Infants' Hospital is to weigh the baby dressed and with napkin in place before and after weighing. The difference in weight equals amount taken. By the above procedure stool or urine passed during or immediately after the feed is "caught," and does not upset the calculation. The manner of feeding—whether one or two breasts, and time allowed is usually that habitually employed at the time by the mother—unless such be obviously unsuitable, as half an hour at one breast. One useful guide is quite simply ten minutes at one breast.

Once we have come to a decision that help is needed, the steps taken fall naturally under two headings (1) general, and (2) local treatment.

*General treatment* involves an increased attention to the hygiene and health of the mother, as also to her mental attitude—along lines previously considered.

Two special considerations arise further, which must be dealt with separately. (1) the quantity of fluid in the diet; (2) the question of special galactogogues

In my experience there is some evidence that the supply of milk tends to be increased or decreased by variations in the quantity of fluid taken. I do not wish to emphasize the obvious, that if one pint or more of water is to be excreted in the milk, an extra supply

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towel, always from the periphery towards the nipple.

(b) *Breast Massage*.—This is not to be undertaken lightly by the inexperienced. In the hands of the expert it has undoubted value. The movement usually practised is first gentle and then firm stroking (*effleurage*) along the lines of vessels of blood supply. Tapotement or tapping with the fingers is sometimes used, and is permissible, but kneading movements (*pétrissage*) may be definitely harmful, and have no place in the manipulation of the breast.

The baby must be put to the breast regularly, and one breast at least, preferably two, should be completely emptied at each feeding. If the child is unwell, or for any other reason taking badly, the breasts must be systematically and regularly emptied at the usual hours by expression or with a breast-pump. While it is advisable to let the child be really hungry at each feeding time, it must be remembered that the fretfulness of a starved infant will react psychologically badly on the mother. This must not be allowed. On no account must "odd bottles" be given between feeds, but if necessary a small complementary feed may be given after the breast at the time of feeding, to make up the necessary amount. If such a feed be given it should neither be too sweet nor taken by the child too easily. Give a hard teat, and make him work at the bottle, otherwise he will be found to be getting lazy at the breast. The complementary feed may be taken from bottle or spoon, but more air tends to be swallowed with spoon-feeding, and may give rise to flatulence.

# Artificial Pneumothorax: A Review of 46 Cases.

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IN any new form of treatment there is a certain tendency by its advocates to emphasize the good results obtained while minimizing, if not actually omitting, any reference to the indifferent or frankly bad results and the difficulties encountered. A summary, therefore, of a series of cases in which artificial pneumothorax was attempted or carried out, together with the results and difficulties encountered, will probably be of some value in estimating the true worth of this treatment, and is our only excuse for adding to the already extensive literature of the subject.

The cases to be considered comprise the total artificial pneumothorax work carried out at the City of London Hospital, Victoria Park, from February, 1922, until May, 1924. The number of cases treated was 46, of which 19 were males, and 27 were females. Their ages ranged from 8 to 42, 63 per cent. being in the decade 15 to 25.

The diseases for which pneumothorax was employed may be grouped in the following way.

GROUP 1 — Extensive tuberculosis disease of one lung,  
the other being apparently free, on clinical and X-ray  
examination - - - - - 13 cases

GROUP 2 — Extensive tuberculosis disease of one lung,  
the other being slightly affected - - - - - 24 cases



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|                                                                                         |   |   |   |   |   |         |
|-----------------------------------------------------------------------------------------|---|---|---|---|---|---------|
| GROUP 3 —Bilateral tuberculosis disease (with the idea of obtaining selective collapse) | - | - | - | - | - | 5 cases |
| *GROUP 4 —(a) Copious hæmoptysis (as an emergency measure)                              | - | - | - | - | - | 1 case  |
| (b) Repeated hæmoptyses                                                                 | - | - | - | - | - | 5 cases |
| GROUP 5 —Bronchiectasis                                                                 | - | - | - | - | - | 3 cases |
| GROUP 6 —Abscess of lung                                                                | - | - | - | - | - | 1 case  |

\* These cases are also included in Groups 1, 2, and 3

In the tuberculous cases, the period between the onset of the disease and the induction of artificial pneumothorax varied from three months to four and a-half years. In only three cases was the period under six months; in 12 cases it was over two years. Pneumothorax was not induced in cases where the disease was confined to the apex of one lung, nor in cases where the disease showed a tendency to become arrested with conservative treatment.

The operation was performed on the right side on 23 occasions, and on 22 on the left. In one case a pneumothorax was induced on both sides. In all but 6 cases a free pleural space was found at the first puncture. Of these 6 cases, fluctuation of the manometer was obtained at the second puncture in three, at the third puncture in one, at the fourth puncture in one, and in one case no free pleural space was found after four punctures. In 5 cases an artificial pneumothorax was not definitely established. Total collapse of the lung was obtained in only 5 cases of the series, but in another 15, good functional collapse was only prevented from being absolutely complete by one or two small adhesions, usually at the apex. In the remaining 21 cases partial collapse of a varying degree occurred.

### ADHESIONS.

The adhesions preventing collapse varied in type; in some the lung was firmly adherent at the apex, while in the majority, band-like adhesions stretched from the lung to the chest wall, and were situated in

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about equal numbers at the apex, base, and mid-field. In six instances these separated completely, and in nine others stretched to a greater or less extent during treatment.

### TEMPERATURE.

The ultimate effect of adequate collapse of the lung was almost invariably to reduce the temperature to normal and to lessen the diurnal swing, the time taken varying from ten days to eighteen weeks. In five instances, the effect on the temperature and pulse rate was dramatic—the fever, previously often long-continued (in one instance for eighteen weeks and in another for sixteen weeks), subsiding after the second or third injection of air. In a larger number of cases, namely 20, the temperature fell gradually to normal, and remained so, except for occasional reactions in some cases. In many instances this effect was obtained long before there was any marked collapse. A slight diminution in the movement of the affected lung seemed noticeably to lessen the toxæmia, as shown also by the reduced pulse-rate. In 19 cases the temperature either showed no alteration or fluctuated, alternately showing improvement and relapse. In two cases the temperature was apparently increased by the pneumothorax.

### REACTIONS.

Febrile reactions were a comparatively frequent and troublesome feature in the course of the pneumothorax in which the collapse was only partial. It is surprising, therefore, that very little reference to them has been made in the literature. In 18 cases of partial collapse, these reactions occurred at some time during the course of treatment, and were absent invariably in all those in which there was complete collapse. The reactions invariably consisted of a rise in temperature, sometimes, but not usually, accompanied by vomiting, paroxysmal attacks of coughing, and pains in the chest, frequently

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delayed for about eight hours. The most constant feature, however, was the rise in temperature varying from 99° F. to 104° F., occurring from six to thirty-six hours after the operation, usually subsiding to normal within twelve hours, but occasionally remaining raised for a period varying from one to seven days. Burrell,<sup>1</sup> in his excellent report (with McNalty) to the Medical Research Council, says: "in my experience, if a patient has a reaction after the initial operation, he is liable to reactions after refills, but after three or four refills the reaction does not occur." We have come to regard such reactions occurring during the early period of treatment as being due to the patient's nervousness; they disappear as he becomes accustomed to the operation.

In our experience, however, there is a much larger group of cases in which reactions do not occur during progressive collapse, but commence at a point where further compression is prevented by strong adhesions. In these cases in which the optimum amount of collapse has apparently been obtained, any further increase of pressure results in a febrile reaction, which, like the typewriter bell, sounds a warning against proceeding farther, and counsels the adoption of a new line of action. In several cases in which the adhesions stretched or separated, the resulting diminution or disappearance of the reactions emphasized the part played by them. We do not wish to infer, however, that it is wise to attempt to break down adhesions by excessively raising the intrapleural pressure.

Reactions will frequently occur if the interval between refills is so prolonged as to allow the lung to re-expand partially. A sudden compression of the lung resulting presumably in a flooding of the circulation with tuberculous toxins produces, in reality, a severe auto-inoculation.

In the non-tuberculous cases, even when complete

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collapse of the lung was prevented by adhesions, reactions did not occur.

Various methods were adopted to eliminate these reactions. Morrison Davies<sup>2</sup> recently mentioned that intestinal stasis might possibly be a factor in their production. We, therefore, paid careful attention to the bowels prior to each refill, without any obvious effect. In two cases, at Dr. Riviere's suggestion, we tried the effect of graduated refills, i.e. injecting small quantities of air (100 to 150 c cm) at intervals of twenty to thirty minutes over a period of about one and a-half hours, the needle remaining in the chest throughout. By thus substituting a more gradual compression it was hoped that the reaction might be avoided. No appreciable difference, however, was made by this modification.

The most effective method of eliminating these reactions, in the absence of an effusion, appeared to be to reduce the intervals between refills, and to give smaller quantities of air without raising the pressure more than a few centimetres. After several refills, the optimum pressure consistent with adequate collapse was usually found, not without considerable difficulty in some cases, however, and the reactions decreased in intensity, and ultimately ceased.

The onset of a pleural effusion increases the intrapleural pressure and raises the temperature. The introduction of more air with a consequent rise in pressure will produce a reaction. In such cases it is advisable to wait until the intrapleural pressure has fallen to its original level, or even lower, before giving a refill. Radiograms and tests for the intrapleural pressure should be taken during this period to guard against a rapid re-expansion of the lung.

### SELECTIVE COLLAPSE.

Barlow and Kramer<sup>3</sup> recently wrote optimistically

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of selective lung collapse in pulmonary tuberculosis. They aim at maintaining a partial collapse by introducing small amounts of air at frequent intervals, and at keeping the intrapleural pressure below that of the atmosphere at all times. They affirm that the air tends to collect over the affected portion of the lung owing to the diminished elasticity and greater tendency of the diseased portions to collapse.

The application of this form of treatment appears to us to be very limited, because it depends on the absence of pleural adhesions over the affected portion of lung, a condition which, unhappily, except in the very early cases, is not very frequently found. In the five cases in which we attempted to follow their methods we were rather troubled by febrile reactions, undoubtedly associated with the presence of adhesions.

Barlow and Kramer do not mention this complication, possibly because they were able to select early cases, and were able to induce the air to remain round the affected apex. In our cases there appeared to be a tendency for the air to collect in pockets over the lung in front, possibly associated with the recumbent position of the patient.

### X-RAY APPEARANCES.

In the series of radiograms taken to control the lung collapse it was noticed that as complete collapse was obtained, increased shadows were observed in the functioning lung, which at first sight suggested that that lung was becoming affected, or that if already affected, the disease was progressing. In a number of cases this was obviously not the true explanation of the radiographic changes, as shown by the steady progress of the patient and the absence of physical signs in the functioning lung. It seems probable that the increased density is due either to a relative compression caused by displacement of the mediastinum,

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or more probably to an increased blood supply to that lung. The pessimistic outlook suggested by the radiogram is, therefore, in our experience, not always justified.

### COMPLICATIONS.

1. *Pleural Shock*—At each operation the skin, intercostal tissues, and especially the pleura were carefully anæsthetized with 2 per cent novocaine. No case of pleural shock occurred. In one case the patient complained of feeling faint and of a peculiar dragging sensation in the homolateral side of the neck. She became rather pale although the pulse remained strong, and after the needle was withdrawn she soon recovered. Another patient had a sudden attack of dyspnœa which simulated asthma. The needle was immediately withdrawn, 10 minims of adrenalin injected subcutaneously, and the symptoms rapidly subsided. Both these manifestations took place in cases where the pneumothorax was well established, and no similar attacks occurred.

2. *Pleural Effusion* supervened at some time during the treatment in 14 cases (30.4 per cent), all of which were tuberculous patients. The effusion occurred in 7 cases with pneumothorax of the right side, and in 7 cases with pneumothorax of the left side. The average interval which elapsed between the commencement of pneumothorax and the onset of the effusion was ten weeks, although in several cases it was delayed for as long as six or eight months. The duration of the effusion varied from fourteen days to eight months, and in 3 cases recurred after having been absorbed. The effusion was invariably serous in nature, and in 11 of the cases did not alter. In the other 3 the fluid gradually changed to thin green sterile pus which in 2 cases, was ultimately absorbed. A spontaneous pneumothorax unfortunately occurred in the third case

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and caused a secondary infection of the pleural cavity. In 11 patients the fluid was not withdrawn; the intervals between refills were lengthened and the amount of air injected was reduced in proportion to the amount of fluid present, in order that the intra-pleural pressure might be kept fairly constant. The presence of the fluid did not, as a rule, seem to affect the general condition of the patient, and thus conservative treatment seems to be fully justified by the results.

In the other cases where the fluid caused dyspnoea, or where the underlying lung tended to re-expand, the fluid was aspirated and replaced by air, by Riviere's<sup>4</sup> "two needle method," with which the intrapleural pressure remains constant.

One patient, as previously mentioned, developed a spontaneous pneumothorax and coughed up the greater part of the pleural fluid. The pleuro-pulmonary fistula closed for a time but afterwards re-opened. An empyema resulted and lasted until the patient died five months later.

3. *Surgical Emphysema* around the needle track occurred on several occasions. It was usually slight and did not cause any untoward symptoms.

### RESULTS.

In attempting to form a true estimate of the results of treatment, several difficulties present themselves. In the first place, it is not possible to compare the results in the tuberculous with those obtained in the non-tuberculous cases. Secondly, there is considerable divergence of opinion as to the type of case suitable for this treatment. On the Continent there is a tendency to induce pneumothorax in early pulmonary tuberculosis with an inevitably larger percentage of good results. On the other hand, the tendency in England is to regard this treatment as a last resort where more conservative measures have

failed, and consequently the percentage of good results is much lower. Thirdly, allowance must be made for such factors as age, sex, and temperament.

In judging the results it must be borne in mind that none of the tuberculous patients in this series could be regarded as early cases. They all had well-marked disease of at least one lung, were all febrile when the treatment was commenced, and in the majority of cases were steadily getting worse in spite of general hospital treatment.

In attempting to classify the results we have divided the cases into the six groups already mentioned.

*Group 1.*—Of the Group 1 cases, three have recovered and have returned to their previous occupations. Collapse is still being maintained by refills at intervals of one month in two of these cases (both males, aged 25 and 22 years respectively). The third, a female aged 26 years, is a case in which the good result obtained can be absolutely ascribed entirely to pneumothorax treatment. Extensive disease in both lobes of the left lung was present, associated with marked loss of weight and an evening temperature averaging 100 2° F. for seventeen weeks. After the fifth refill the temperature subsided to normal and remained so, while her general condition steadily improved.

Four cases have definitely improved, and are now living quiet lives comparatively free from symptoms. Three patients died, one following a thoracoplastic operation, one from empyema following spontaneous pneumothorax, and the third from generalized tuberculosis.

*Group 2* —Six cases of this group have definitely improved and are now doing light work; 8 have improved in that they are afebrile, comparatively free from symptoms, able to get about but not yet fit for work; 1 case is much better but is still confined to bed;



and caused a secondary infection of the pleural cavity. In 11 patients the fluid was not withdrawn; the intervals between refills were lengthened and the amount of air injected was reduced in proportion to the amount of fluid present, in order that the intra-pleural pressure might be kept fairly constant. The presence of the fluid did not, as a rule, seem to affect the general condition of the patient, and thus conservative treatment seems to be fully justified by the results.

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four months respectively, with the result that the cough in each case disappeared, the general condition improved, and both are now well and attending school.

*Group 6.*—Pneumothorax in the one case in this group was induced for an abscess of the lung following an infarct. Complete collapse was prevented by two dense bands of adhesions over the abscess. An operation for the division of the adhesions was done, but sepsis of the pleura supervened and the patient died from toxæmia.

The results may be tabulated in the following way :

| Result.                                          | Group 1 | Group 2 | Group 3 | Group 4                                                         | Group 5 | Group 6 | Total |
|--------------------------------------------------|---------|---------|---------|-----------------------------------------------------------------|---------|---------|-------|
| Greatly improved and returned to some occupation | 3       | 5       | —       | The four cases of this group are included in groups 1, 2, and 3 | 2       | —       | 10    |
| Definitely improved, but not fit for work        | 4       | 10      | —       |                                                                 | —       | —       | 14    |
| General condition <i>in statu quo</i>            | —       | 2       | 1       |                                                                 | —       | —       | 3     |
| Condition worse than before A.P. started         | —       | —       | 1       |                                                                 | —       | —       | 1     |
| Dead - - -                                       | 3       | 5       | 3       |                                                                 | 1       | 1       | 13    |
| * Total - - -                                    | 10      | 22      | 5       |                                                                 | 3       | 1       | 41    |

\* In five cases, pneumothorax was not definitely established

We are indebted to Dr. Riviere, under whose care the majority of these patients were, for his valued advice; also to Dr. Hadley, Dr. Colbeck, Dr. Levy, Dr. Scott Pinchin, and Dr. Chandler for permission to publish the records of their cases.

## References.

<sup>1</sup> Burrell and McNalty, *Report to Medical Research Council*, No 67, p 64 <sup>2</sup> Mornston Davies, *Tubercle*, 1922, iii, 193 <sup>3</sup> Barlow and Kramer, *Am Rev Tub*, 1922, vi, 75 <sup>4</sup> Riviere, Chve, "Pneumothorax Treatment of Pulmonary Tuberculosis," p 145

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2 cases have made no improvement, and 5 of the group died.

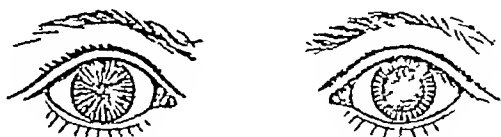
*Group 3.*—This group, as previously stated, consisted of 5 cases of bilateral disease in which selective collapse was attempted on one or both sides. The results were not encouraging, 1 case slightly improved, another improved temporarily but later became gradually worse, and the pneumothorax was abandoned owing to increased difficulty in introducing air. On the remaining 3, pneumothorax had no effect and was discontinued, and the patients ultimately died.

*Group 4.*—In this group pneumothorax was induced in 1 case as an emergency measure, to stop a copious hæmoptysis. The hæmorrhage ceased after two injections of 950 c.cm. and 1,000 c cm. of air with an interval of fifteen hours. When the lung re-expanded, hæmoptysis again ensued, and was again stopped by the injection of 1,500 c cm. of air. Several small hæmorrhages occurred at intervals, but as the pneumothorax was continued, these soon ceased. The patient is now able to do light work. In 2 cases with repeated small hæmoptyses, pneumothorax was also induced. Both patients are definitely improved; in one there has been no further hæmoptysis, and in the other, occasional slight staining of the sputum has occurred.

*Group 5.*—Of the three cases in this group, 1 had advanced bronchiectasis with secondary tuberculous infection, and 2 suffered from slight fibrosis of the lung with early bronchiectasis. The first patient, who was suffering from severe toxæmia and coughing up large quantities of sputum, did not derive any benefit from the induction of pneumothorax. She died nine weeks after admission to the hospital. The other 2 cases under Dr. Chandler, females, aged 7 and 8 respectively, benefited considerably from the treatment. The pneumothorax had been maintained for five and

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hour. Adrenaline, of course, has no effect upon the pupil of a healthy individual, but in acute pancreatitis one often gets a positive reaction, namely, dilatation of the pupil. This dilatation is not infrequently eccentric,



Loewi's Test—A positive reaction.

and often conspicuously oval in form (see figure). A negative result implies nothing (*vide* case 4), but a positive result in an abdominal case is practically pathognomonic of the disease (*vide* cases 1, 2, 3). There are some who suggest that half an hour's delay whilst awaiting the result of the instillation is not justifiable in urgent abdominal cases. With this I entirely disagree. The half-hour can be very profitably employed in treating shock, and getting the patient into the best possible condition for operation. A rectal saline can be administered, and if the decision has been reached that the lesion is in the upper abdomen and requires "immediate" operation, there is no objection to giving the patient morphia.

The mechanism of the test is not easily explained. The inflamed pancreas by some means renders the whole of the sympathetic nervous system very sensitive. This sensitization of the sympathetic may be produced hormonically via the secretion of the islets of Langerhans, or mechanically by pressure of the swollen pancreas on the solar plexus. When this sensitization has been brought about, adrenaline in the conjunctival sac detonates the ocular sympathetic, causing a dilatation of the pupil. The explanation of the peculiar eccentricity of this mydriasis is even more obscure. It seems possible that the adrenaline

# The Value of Loewi's Mydriatic Test in the Diagnosis of Acute Pancreatitis.

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Society of Apothecaries*

THE rarity of acute pancreatitis makes it very desirable to have a reliable scientific test by which the diagnosis may be rapidly confirmed. Speaking generally, scientific confirmatory tests are only available for chronic cases. The acute abdominal catastrophe, as often as not, comes under observation for the first time late at night, when laboratory facilities are at a low ebb. Even if these facilities are at hand, by the time a report has been received only too often is it merely a matter of academic interest as far as an urgent diagnosis is concerned. In Loewi's mydriatic test we have a very valuable sign, which, above all, is eminently practical. It can be performed at the bedside by the clinician. If the sign is positive it is absolute as far as an acute abdominal diagnosis is concerned. The clinical diagnosis of acute pancreatitis is notoriously difficult, and as Loewi's test may be the means of throwing light upon this perplexing problem, surely its aid should be more commonly sought than is the case at the present time.

The technique of the test is as follows:—

Examine the pupils; into one conjunctival sac instil 4 drops of fresh 1-1000 adrenaline solution; wait five minutes, then instil another 4 drops and wait half an

## ACUTE PANCREATITIS

ness most marked in R.I.F. *Loewi's test strongly positive* Pupil markedly eccentric

*Operation*—Laporotomy Fat necroses general Lesser sac full of blood-stained fluid No gall stones Cholecystotomy and drainage of lesser sac Patient rapidly improved, and was discharged from hospital at the end of the fourth week She has remained in good health for over a year.

*Case 3*—Shopkeeper, aged 61 Sixteen hours ago, whilst in bed, had sudden abdominal pain Vomited twice Pain is continuous mostly round navel Does not radiate to back Enormously fat man in great pain P 88 T subnormal Rigidity very slight and not constant Tenderness most marked in epigastrium *Loewi's test strongly positive*

*Operation*—Laporotomy Patient took anæsthetic badly Bottle after bottle of ether had but little effect Chloroform and oxygen had to be resorted to No fat necroses A small amount of blood-stained fluid in lesser sac Gall bladder full of stones Cholecystotomy Lesser sac drained Patient rallied well, and at the end of a week gave promise of recovery On the fifteenth day he looked toxic, but complained of nothing Urine normal On the seventeenth day respiration was laboured, and during the evening of the eighteenth day passed into coma and died six hours later Post-mortem examination showed purulent pancreatitis There was no general peritonitis, and, curiously, fat necroses were completely absent An interesting feature of the case was that the pupil on the side which had been instilled with adrenaline remained widely dilated for three days

*Case 4*—Female, aged 57 Four days ago had sudden abdominal pain and frequent vomiting Pain now localized in the right hypochondrium Three previous similar attacks Very obese Deep tenderness in right hypochondrium *Loewi's test completely negative* A diagnosis of acute cholecystitis was made, and the patient was placed in Fowler's position During the day her general condition became worse The pulse-rate rose from 90 to 116 In the evening it was decided that operation was necessary

*Operation*—Laporotomy Fat necroses general Lesser and greater sacs filled with large quantity of blood-stained fluid Gall bladder small and packed with stones Cholecystectomy and drainage of lesser sac Patient made an uninterrupted recovery, *Loewi's test* was tried on two occasions after operation, with a completely negative reaction Four months later—the patient was readmitted with a similar, but slight attack, which passed off in two days *Loewi's test* was again negative She was seen ten months later and reported that she had enjoyed excellent health

*Case 5*—Schoolboy, aged 13 Was admitted with acute appendicitis Through a gridiron incision a gangrenous appendix was removed Eleven days later the lad presented the following signs He was flushed and slightly jaundiced The temperature was

## THE PRACTITIONER

will tend to gravitate in the lower part of the conjunctival sac, and thus the sympathetic fibres to this part of the iris may be more strongly stimulated than the remainder.

In the cases under my observation, which gave a positive Loewi's reaction, the dilated pupil did not react to light. There was, however, one exception (case 5), which proved to be at operation a peripancreatic abscess secondary to suppurating mesenteric glands. The dilatation of the pupil in this case was very marked, but the pupil immediately reacted to a bright light and took some three minutes to dilate again when the light was removed. I have ventured to call this a pseudo-Loewi's reaction, and only an extended trial in similar cases will reveal whether this phenomenon may be looked upon as diagnostic of suppuration around the pancreas as opposed to a true pancreatic lesion.

*Case 1* —Motor-driver, aged 33 Thirty-six hours before, whilst driving his bus, was seized with sudden epigastric pain, which passed to the shoulder-blades Had a similar attack three weeks previously, lasting only a few hours, and another two years before Had suffered with bronchitis all his life Thin, muscular man Looked very ill Cyanosis of lips, tenderness in epigastrium, and very marked tenderness over gall-bladder No abdominal rigidity T 97 P 96 Diffuse crepitations over both lungs *Loewi's test* was strongly positive

*Operation* —Laparotomy Fat necroses general Gall-bladder fibrotic and contained stones Lesser sac full of blood-stained fluid Cholecystectomy performed. Lesser sac drained Patient improved slightly for three days On the fourth day the outlook was hopeful, but his bronchitis troubled him a great deal On the fifth day he became cyanotic and drowsy, and died in coma on the seventh day. A post-mortem examination showed acute, but resolving, pancreatitis, and broncho-pneumonia There was no peritonitis Culture from the gall-bladder at the time of the operation grew staphylococcus, and a section of the pancreas from the post-mortem specimen showed the same organism

*Case 2* —Female, aged 51 Forty-eight hours ago sudden onset of pain in epigastrium, passing to back, but not to shoulders Repeated vomiting Has had two or three similar attacks Very fat woman. P. 130. T 99 No abdominal rigidity Tender-

# Acetonuria in Acute Mental Disorders.

By COL C E PALMER, M A , M B , B Ch , I.M.S

*From the Department of Pathology, Bethlem Royal Hospital.*

OF late years so much work has been done on the occurrence of acetonuria, and this condition is so common in acute mental disorders, that it appears advisable to collect the results of recent investigations, and review them in the light of the experiments described below. Shaw considered the occurrence of acetonuria as evidence of an acidosis. Cammidge pointed out that acetone bodies may occur in the urine independently of any acidosis. Thomas found that in the majority of cases of mental disorders there is no acidosis, but that in a small group only a slight degree of acidosis can be detected. Hubbard and Wright refer to fats and compounds, which give rise, in the course of metabolism, to aceto-acetic acid and allied bodies as "ketogenic," and to glucose and related substances as "antiketogenic." They also point out that where a diet is poor in carbohydrate and rich in fats there is an increase in the acetone bodies in the urine.

Shaffer finds that there is a border-line diet which will just produce an excretion of acetone bodies, namely :

10 per cent of the calories derived from protein.

10 per cent. of the calories derived from carbohydrate.

80 per cent of the calories derived from fat.

A normal diet may be represented by protein 98 grams, carbohydrate 416 grams; fat 60 grams per diem. Here the ratio by weight of carbohydrate to



## THE PRACTITIONER

swinging between 100 and 102. There was general abdominal rigidity, most marked in the right hypochondrium. A lump could be felt behind the umbilicus extending to the left. On the right side its limitations could not be defined owing to rigidity. *Loewi's test gave a wide dilation of the pupil, which contracted when a bright light was brought near.* This reaction lasted for five hours.

*Operation* —Laporotomy. A large retro-peritoneal abscess was found surrounding the pancreas. Its origin appeared to be from breaking down mesenteric glands. The abscess drained after an omental "barrier" had been constructed to shut off the peritoneal cavity below. The patient, after a long convalescence, made an excellent recovery.

I have had three further cases of acute pancreatitis under my care, but unfortunately they occurred before I adopted Loewi's test in all suspicious cases.

I submit that Loewi's test is a most practical aid, and worthy of a permanent place in the diagnostic armamentarium of all those whose duty it is to deal with acute abdominal cases.

## ACETONURIA

Case 2.—Male, æt 24 Spoon-fed Weight, 7 st. 6 lb.  
No acetone.

The diet of both these patients was supplemented by 3 oz of olive oil in twenty-four hours. In both cases acetone bodies appeared in the urine, and disappeared on cessation of the administration of the oil.

*Group 2*—These patients are taking a normal diet, but showing signs of marked digestive disturbance. The appearance of acetone in this group is not constant, as it may vary in amount from day to day, and may be absent one day and reappear the next. The effect of increasing the carbohydrate in the diet of this group is variable, in some cases the acetone is diminished, in some increased, in others there is no change.

*Group 3*.—These patients are taking normal diet and show no sign of digestive disturbance. Moreover, no evidence could be obtained of insufficiency of liver or pancreas. There appears to be a disturbance of the ketogenic balance, which may be only temporary.

### PRACTICAL APPLICATION.

The diets for spoon-feeding and tube-feeding are generally deficient in carbohydrate, and this is best rectified by the addition of cane sugar. As the existence of acetonuria does not always imply an acidosis, sodium bicarbonate is not necessary. In many resistive cases the administration of alkali will be followed by a diminution of resistiveness, but this is only temporary. Of the cases investigated, 47 per cent belonged to the manic depressive group. Our observations support the view that acetonuria, in acute mental disorders, is of secondary importance, and although it may point the way for investigation, it is not responsible for any mental symptom, with the possible exception of resistiveness.

## THE PRACTITIONER

fat is 7·1, and of the carbohydrate calories to fat calories  $7 \times 4 : 1 \times 9 = 3 : 1$ . An average spoon diet consists of milk  $1\frac{1}{2}$  pints; soup 10 oz, bread 6 oz. a day. Here the ratio of carbohydrate calories to fat calories is 1 : 1·5. The usual tube-fed diet consists of milk 3 pints; eggs 3; in twenty-four hours. In this case the ratio of carbohydrate calories to fat calories is 1 : 2. So that for every six calories produced from fat the number of calories produced from carbohydrate will be . in normal diet 21, in spoon diet 4; and in tube diet 3.

Of the new admissions to Bethlem Royal Hospital 6 per cent show a pathological amount of acetone in the urine. They fall, as follows, into three groups.

*Group 1.*—These patients are mostly spoon-fed or tube-fed, and the acetonuria is due to a deficiency of carbohydrate in the diet. The addition of 3 oz. of cane sugar daily to the diet alters the proportion of carbohydrate to fat, so that the former preponderates, and the acetone bodies disappear from the urine. There are, however, many spoon-fed and tube-fed patients whose urine shows no acetone, even on repeated examination. It is well known, however, that in starvation the elimination of acetone bodies by individuals previously well nourished is not apparent at first, because the carbohydrate, stored in the body, is sufficient to maintain the proper proportion of carbohydrate to fat. As the store of carbohydrate becomes exhausted acetone bodies appear in the urine, but if starvation be prolonged they disappear, as the fat also is used up, and the body is subsisting on its protein. As we should expect, it is the very thin tube-fed patients who do not pass acetone. For example.

Case 1 —Male, æt. 45. Tube-fed. Weight, 6 st. 10 lb.  
No acetone.



# Practical Notes.

## *The Prophylaxis of Measles.*

J. H. Townsend has employed blood from convalescents as a prophylactic measure in an epidemic of 63 cases of measles in a boarding-house of 400 boys. A dosage of 9 c cm. of whole blood (5 to 5½ c cm. serum) had little or no effect in preventing infection, but influenced markedly the course of the disease when it was given before the end of the first week of the incubation period. The duration of the period of fever was noticeably reduced, the maximum temperature was lower, and the average stay in hospital was lessened by nearly a half. No complications whatever occurred in the boys who were inoculated, while one-fifth of the others affected had various complications. The inoculations had no ill effects — (*Boston Medical and Surgical Journal*, May 13, 1926, p 870)

## *The Treatment of Syphilis.*

G. Milian points out that the medical profession is beginning to forget what a serious disease syphilis really is, and that it is relying too much on treating it with mild courses of drugs and accepting too readily negative blood tests. Dr Milian states that he meets as many cases of syphilis to-day as he did in 1919, though this may be due in part to the influx into France of foreigners and of the inhabitants of the French African colonies, where syphilis is rampant. He insists, however, that in the treatment of syphilis to-day the diversity of drugs and their doses, methods of administration, and length of the course of treatment, do a great deal of harm — (*Paris Médical*, March 6, 1926, p 225)

## *Diagnosis of Syphilis of the Mouth and Pharynx.*

H. Plant notes that dental treatment may be of importance in determining the occurrence of a primary syphilitic lesion in the mouth. An ulcerative membranous tonsillitis may be due not only to tertiary syphilis, but also to secondary syphilis. If there is a history of a sudden beginning of a sore throat, and fever is present, the condition is unlikely to be syphilis, the absence of swelling of the lymph glands is also against the diagnosis of syphilis — (*Deutsche Medizinische Wochenschrift*, March 19, 1926, p 475)

## *Treatment of Acute Gout.*

J. Forestier insists that in the treatment of acute gout colchicum is the only medicament, and salicylate of soda, atophan, and aspirin must be used with caution, as they are not eliminators, as colchicum is, but may act as irritants to the kidney. The following formula is recommended:

℞ Tinct. colchic  
Tinct. aconit  
Tinct. jalap co  
Tinct. quinin      aa g 10 (5 ijs)

## THE PRACTITIONER

Sig Thirty drops to be taken thrice daily, in a glass of hot water. Locally, compresses soaked with methyl salicylate or laudanum should be applied —(*Journal des Praticiens*, April 10, 1926, p 249)

### *Treatment of Hay Fever and Asthma with High Frequency Electricity.*

W G Lewi has been treating hay fever and asthma with high frequency electricity for a number of years with good results, and last year he treated, during working hours, the employees of the General Electric Company at Schenectady, who suffered each season from hay fever, in order to prove or disprove by extensive trials the efficacy of the method of treatment. The treatment consisted of producing, by means of high frequency electricity—Dr Lewi emphasizes that it must be generated by a proper apparatus, and dismisses as unworthy of attention the small so-called "violet ray" machines—hyperæmia along the middle of the back, from the nape of the neck to the coccyx, and extending from three to five inches laterally, according to the bulk of the patient, a course of six or more treatments were given, altogether, three times a week. Of all the cases of hay fever and asthma treated, 91 per cent showed satisfactory improvement —(*New York State Journal of Medicine*, June 1, 1926, p 489)

### *The Treatment of Tuberculosis with Parathyroid.*

B Gordon, J L Roark, and A K Lewis publish a preliminary report on the effect of parathyroid hormone on certain signs and symptoms in tuberculosis, in a series of 60 cases. The parathyroid hormone was given subcutaneously, the dosage at the beginning of the investigation being between 10 and 20 units daily, but later the large dosage was reduced, after the first few injections, calcium determinations were made every six or twelve hours, but when the calcium level was found to be fairly constant, the estimation was made every six days. It was found that as a result there was improvement in the strength, increased warmth and lessened muscular and pleuritic pain. In some instances there was also a favourable effect on laryngeal tuberculosis. The effect on cough was variable, the dry, hacking cough was often aggravated, but the productive coughs were often less troublesome during treatment, and there was decreased expectoration, there was a favourable effect on dyspnoea. The most striking result of the treatment, however, was in the control of pulmonary hæmorrhage, which was relieved in every case. There was also a decrease in the swelling of the arytenoids and other strictures involved in laryngeal tuberculosis, with some evidence of healing. In pleurisy and pulmonary congestion there was evidence of decreased râles following the administration of the parathyroid. In the X-ray examination, there was a suggestive clearing of the lung fields, but no evidence of calcification. In general, there was a favourable effect on the condition of the patients, as shown by increase of appetite, gain in weight, and lowered temperature and pulse rate. The untoward

## THE PRACTITIONER

features which sometimes appeared were arthritic pains, dryness of the throat, increased cough, palpitation, and periods of elevated temperature and pulse with loss of weight and appetite, which were usually due to overdosage. These phenomena were generally relieved following the withdrawal of the medication, and seldom reappeared during moderate dosage —(*Journal of the American Medical Association*, May 29, 1926, p 1683 )

### *Treatment of Papillomata of the Larynx by X-rays.*

I Solomon and A Blondeau record the case of a man who had had multiple papillomata of the larynx for nine years, causing hoarseness and eventually dyspnoea. The papillomata had been removed surgically, but returned, and other treatment, including even tracheotomy, had proved of little or no benefit. X-ray treatment consisted of seven applications, beginning with a dose of 1000 R units. When the patient was examined eight months after the last application the papillomata had completely disappeared, and the patient was able to speak without any hoarseness —(*Journal de Radiologie et d'Electrologie*, March, 1926, p 112 )

### *Surgical Treatment of Asthma.*

F Erkes notes that while cervical sympathectomy has been performed in a number of cases for the cure of certain types of asthma, no indication has usually been given as to which side should be selected for the operation. Hesse, however, pointed out that in so-called cardiac asthma, symptoms of irritation of the cervical sympathetic nerves were more often present on the left side, suggesting that that side should be the one to be operated upon. Dr Erkes gives details of the case of a man who had increasingly severe attacks of asthma, and, after other methods of treatment had proved of no avail, the right cervical sympathetic was resected, from the superior to the inferior ganglion, with successful results —(*Zentralblatt für Chirurgie*, March 20, 1926, p 718 )

### *The Causation of High Blood Pressure.*

Lord Dawson, in discussing the causation of hyperpiesis, or "supertension," emphasizes the importance of hyperpiesis in youth, in order to show that in its inception it is a functional disease, and because in youth the problem can be kept clearer of athero-sclerosis. The association of hyperpiesis with the climacteric, with eclampsia, and with the blubber type of obesity, suggests some perversion or some warp of metabolism. There is experimental evidence, Lord Dawson notes, that suggests that too much importance has been attributed to both protein and salt intake. As regards the influence of such etiological factors as meat, alcohol, tobacco, and endocrine disturbance, Nador-Nakitt, investigating the details of 495 cases of hyperpiesis, could find no relationship between these factors and hyperpiesis. Lord Dawson concludes that, on the whole, the condition starts in exaggerated function, but the disturbance is not the same in every case —(*Proceedings of the Royal Society of Medicine*, June, 1926, p 27 )

## PRACTICAL NOTES

### *Degrees of Malignancy in Cancer of the Breast.*

B Greenough states that the degree of malignancy of a given cancer of the breast can be determined with reasonable accuracy by study of the histology of the original tumour, and such a classification is of importance in prognosis, and in estimating the value of therapeutic measures. In estimating the degree of malignancy of a given tumour the following factors are of importance (a) Degree of differentiation, as shown by the arrangement of cells around an open gland lumen (adenocarcinoma), (b) degree of secretory activity of cell protoplasm as shown by vacuoles and droplets of mucoid material, (c) uniformity of size of cells and of nuclei, as opposed to variations in size, (d) absence or presence of hyperchromatic changes in the nucleus, and few or many mitotic figures, and whether irregular or not, (e) high malignancy is shown by cells and nuclei of irregular shape and size without secretory function, and arranged in solid columns, large or small, together with numerous and irregular mitoses and hyperchromatism the extreme degree of these features is pleomorphism, (f) a tumour of adenomatous arrangement (adenocarcinoma) with uniform sized cells and nuclei, few mitoses, and absence of hyperchromatism, indicates low malignancy. A high degree of round-cell infiltration appears to indicate a considerable degree of cell degeneration, and is not to be relied upon as an indication of the resistance of the individual to the cancer growth. Hyalinization of the stroma does not indicate active resistance to the tumour growth, but is rather a factor of the age or previous condition of the mammary tissue in which the tumour lies — (*Journal of Cancer Research*, December, 1925, p 453)

### *The Treatment of Placenta Prævia*

E Febres states that the best method of treating placenta prævia, total or partial, is by vaginal Cæſarean section, with rapid evacuation of the uterus. It is important to operate immediately on the first signs of hæmorrhage, without waiting for a second hæmorrhage which may prove fatal to the patient. In fourteen cases which Dr Febres treated in hospital in this way, he had the excellent result of fourteen mothers and fourteen infants living. He insists on the simplicity of the operative technique and the lack of dangers from the anæsthetic in these cases — (*La Gynécologie*, March, 1926, p 158)

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J Schwartze insists that the cystoscope should always be employed where symptoms referable to the genito-urinary tract are present, even if the diagnosis has been established clinically, as more than one lesion may be present. In doubtful cases of chronic appendicitis or gall-bladder disease, or any other obscure abdominal



## THE PRACTITIONER

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# Reviews of Books.

*Psychological Medicine A Manual on Mental Diseases for Practitioners and Students* By SIR MAURICE CRAIG, C.B.E., M.D., F.R.C.P., and THOMAS BEATON, O.B.E., M.D., M.R.C.P. Pp 437 and xiii. London J & A Churchill 4th Ed 21s net

THE fourth edition of this well-known book has been almost entirely re-written in order to include modern views of mental disorder. In particular the authors call attention to the increasingly accepted conception of diseases of the mind as a branch of general medicine—a view which is all the more important at a time when it is claimed that certain forms at least of mental disturbance may be successfully treated by those without a medical training. The descriptions of the major psychoses are worthy of the reputations of the authors. In the section devoted to epilepsy it is to be regretted, however, that more space has not been given to treatment by luminal. When dealing with the neuroses and psychoneuroses the authors give an outline of the views of Freud and Jung, but it is not correct to state that adherents of the Freudian school say that the most common cause of anxiety states is in the cessation of masturbation or of coitus interruptus. Valuable chapters are those dealing with Certification, the Relationships of Insanity to Law, and Laboratory Work. In the last the authors give an account of recent work on the “homoclastic crisis” in mental disorders, blood-sugar curves in mental disorders, and pressure changes in the cerebro-spinal fluid. We can cordially recommend this book as useful for both practitioners and students.

*A Manual of the Parasitic Protozoa of Man* By CHARLES F. CRAIG, M.D., late Director of Laboratories, Army Medical School, Washington. Pp viii and 569. London The J. B. Lippincott Company 35s net

THIS manual is not a zoological treatise, but is intended for the use of health officers, medical practitioners, and laboratory workers, and is the most comprehensive work on the subject that has yet appeared in the English language. The author goes so far as to say that it is believed that this manual contains every fact of real importance that is known regarding the various parasites described, and with this we cordially agree. Advance of knowledge, so rapid in this branch of biology, will of course from time to time upset this claim until a new edition appears, for instance, since publication, Thompson's work identifying some of the supposed human coccidia with forms that inhabit fish (and have been merely ingested) has been published. Each organism is considered under a definite plan and full descriptions are given of diagnostic features and clinical diagnosis. The book is very fully illustrated with drawings and photomicrographs in the text. A notable omission from the manual is that of the Spirochaetes. The author considers that there is much evidence in favour of these organisms being Bacteria rather than Protozoa, and that therefore they should be excluded from a work devoted entirely to protozoan organisms.

## THE PRACTITIONER

condition, the cystoscope should be used as a diagnostic measure in order that the urinary tract may be excluded as the offender. In pathological conditions of the pelvis the effect on the urinary organs must be studied. In children, where a diagnosis of an abdominal lesion is open to question, especially where the urinary system may be the seat of the trouble, the latter should be investigated by means of cystoscopy—(*Medical Journal and Record* (New York), June 10, 1926, p 804)

### *Value of the Dick Test in Scarlet Fever.*

H Deichor considers that the reliability of a negative Dick test may be valued at as high as 93 per cent, and that any failures are due, at least in part, to variation in the susceptibility of the same person. Every streptococcus from a case of scarlet fever does not, however, produce a toxin good enough to give the typical reaction, and some streptococci from cases of scarlet fever produce toxins which are not specific. A case convalescent from scarlet fever has usually a negative Dick reaction, but will usually give a positive reaction to these non-specific toxins—(*Jahrbuch für Kinderheilkunde*, March, 1926, p 74)

### *Treatment of Cervical Metritis by Diathermy.*

P. Flandrin and L. Schul have treated a large number of cases of cervical metritis for the past year by diathermy. When the cervix was enlarged and soft, with the mucous membrane extended and discharge coming away, diathermy was looked upon as the method indicated, the active electrode being applied to the ulcerated part of the cervix. Diathermy was given once a week, and a picro acid dressing was applied afterwards for twenty-four hours, and then hot douching given twice daily. After from three to six applications the ulcerations healed, the cervix returned to its normal size, and the discharge gradually ceased. No anæsthetic was necessary in any of the cases—(*Presse Médicale*, April 7, 1926, p 433)

### *The Avoidance of Birth Injuries.*

J W Newman and W E Levy are of opinion that a large percentage, estimated to be as high as 75 per cent, of birth injuries may be avoided. Practically every type of birth injury has been observed in cases of spontaneous labour. The medical student, the authors emphasize, should be made familiar with the natural mechanism of labour through careful and thorough teaching, and should be taught that interference is a last resort and not a first one. The published statistics which tend to show the lowering of the foetal mortality rate are misleading, inasmuch as this reduction is due to better antenatal care, which eliminates deaths from toxæmia and other preventable causes. Birth injuries are still responsible for an appalling number of foetal deaths, and reduction along this line can come only from proper obstetric teaching and practice—(*American Journal of Obstetrics and Gynecology*, May, 1926, p 645)

# Reviews of Books.

*Psychological Medicine - A Manual on Mental Diseases for Practitioners and Students* By SIR MAURICE CRAIG, C.B.E., M.D., F.R.C.P., and THOMAS BEATON, O.B.E., M.D., M.R.C.P.  
Pp 437 and xiii London J & A Churchill 4th Ed 21s net.

THE fourth edition of this well-known book has been almost entirely re-written in order to include modern views of mental disorder. In particular the authors call attention to the increasingly accepted conception of diseases of the mind as a branch of general medicine—a view which is all the more important at a time when it is claimed that certain forms at least of mental disturbance may be successfully treated by those without a medical training. The descriptions of the major psychoses are worthy of the reputations of the authors. In the section devoted to epilepsy it is to be regretted, however, that more space has not been given to treatment by luminal. When dealing with the neuroses and psychoneuroses the authors give an outline of the views of Freud and Jung, but it is not correct to state that adherents of the Freudian school say that the most common cause of anxiety states is in the cessation of masturbation or of coitus interruptus. Valuable chapters are those dealing with Certification, the Relationships of Insanity to Law, and Laboratory Work. In the last the authors give an account of recent work on the "homoclastic crisis" in mental disorders, blood-sugar curves in mental disorders, and pressure changes in the cerebro-spinal fluid. We can cordially recommend this book as useful for both practitioners and students.

*A Manual of the Parasitic Protozoa of Man* By CHARLES F. CRAIN, M.D., late Director of Laboratories, Army Medical School, Washington. Pp viii and 569. London. The J. B. Lippincott Company 35s net.

THIS manual is not a zoological treatise, but is intended for the use of health officers, medical practitioners, and laboratory workers, and is the most comprehensive work on the subject that has yet appeared in the English language. The author goes so far as to say that it is believed that this manual contains every fact of such importance that is known regarding the various parasitic protozoa, and with this we cordially agree. Advance of knowledge in this branch of biology, will of course from time to time modify this claim until a new edition appears, for instance, the publication, Thompson's work identifying some of the *Isospora* coccidia with forms that inhabit fish (and have been published). Each organism is considered from a plan and full descriptions are given of diagnostic and clinical diagnosis. The book is very fully illustrated with text and photomicrographs in the text. A notable criticism of this manual is that of the Spirochetes. The evidence is that there is much evidence in favour of these being bacteria rather than Protozoa, and that therefore they do not belong from a work devoted entirely to parasitic protozoa.

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No charge is made for the insertion of these notices the necessary details should be sent before the 14th of each month to The Editor, THE PRACTITIONER, Howard Street, Strand, London, W C 2, to secure inclusion.

**BANKS, H** Stanley, M B, Ch B Glas., D P H Camb., appointed Medical Superintendent, Leicester City Hospital and Isolation Sanatorium

**BENSON, Elizabeth E.**, M B, Ch B Brist., appointed Medical Officer to the Gloucester Board of Guardians

**BROADHURST, W.**, M B., Ch B Manch., appointed Casualty House Surgeon to Salford Royal Hospital

**CHANCE, O.**, M B, Ch B Dub., appointed House Surgeon to Salford Royal Hospital

**COMBER, Violet**, M B Lond., appointed Resident Medical Officer at Willesden Municipal Hospital

**DOWLING, Ellen**, M B, Ch B Liverp., appointed in charge of the Maternity and Child Welfare work at West Ham

**DUFF, Donald** F R C S, F R F P S, appointed Visiting Surgeon Glasgow Royal Infirmary, Lecturer and Examiner in Clinical Surgery University of Glasgow

**ECCLESTON, C.**, M B., Ch B Manch., appointed House Surgeon to Salford Royal Hospital

**EMPSON, John**, M D, C M Montreal, L R C P I, L R C S I, appointed Medical Officer to Western General Dispensary, Marykbone Road

**EVANS, J** Powell, M R C S, L R C P, appointed House Physician to Charing Cross Hospital

**FITZSIMONS, R. A.**, B Sc Lond., M R C S, L R C P, appointed House Surgeon to Charing Cross Hospital

**GABRIEL, W B** M S Lond., F R C S Eng., appointed Surgeon to the Royal Northern Hospital Holloway N

**GAWNE, E S.** M R C S, L R C P Lond., D P H D M R E Liverp., appointed Medical Superintendent Townley's Hospital Bolton

**HALL, J S.**, M B, Ch B Glns., D P H Camb., appointed Certifying Factory Surgeon for the Rothley District, co Rut

**HEARN, L. W.**, M B, B S Durh., appointed Resident Medical Officer, Hull Sanatorium

**HINDLEY, Lieut.-Colonel G D.**, M C, M D., appointed Medical Referee under the Workmen's Compensation Act 1925, for the districts of the Uxbridge and Brentford County Courts (Circuits 34 and 46 respectively) vice Matthew Dobbs, M D, deceased

**HORSFORD, Cyril**, M D Edin., F R C S, appointed Honorary Laryngologist to the Royal College of Music

**LEVI, David**, M S Lond., F R C S Eng., appointed Surgical Registrar to St Mary's Hospital, Paddington

**LEWIS, Graham**, M S Lond., F R C S Eng., appointed Consulting Gynaecologist to the Birmingham General Dispensary and also Honorary Consulting Gynaecologist to the West Bromwich and District Hospital

**LIGERTWOOD, C. E.**, M B, Ch B Vict., appointed Certifying Factory Surgeon for the Wivelcome District, co Somerset

**LINDSAY, Colin D.**, M D Lond., appointed Physician to South Devon and East Cornwall Hospital, and Physician to Royal Eye Infirmary Plymouth

**McSWINEY, B. A.**, M B., B Ch B A O Dub., appointed Professor of Physiology in Leeds University

**MELLOTT, J. H.**, M B., B Ch., B A O, N U I., appointed District Medical Officer to the Southwark Guardians

**PARKER, W. M B** Ch B Edin., D P H, appointed County Medical Officer for Worcester

**PASSEY, Richard Douglas**, M D., B S Lond., appointed to the new chair of Experimental Pathology and Director of Cancer Research in the University of Leeds

**PEARSON, W J.** D S O, M C M D, B Ch Oxon., M R C P Lond., appointed Honorary Physician to Cheyne Hospital for Children, Chelsea, S W 3

**ROBINSON, James S.**, M B, B Ch Dub., F R C S Edin., appointed Honorary Surgeon and Orthopaedic Surgeon, Cheltenham General and Eye Hospitals

**SALISBURY, Walter**, M D, M S Lond., F R C S Eng., appointed Honorary Assistant Surgeon, Northampton General Hospital

**STUNGO, Ellis**, L R C P and S Edin., appointed Assistant Medical Officer at Northumberland House, Green Lanes, Finsbury Park, London, N 4

**SULLIVAN, J.**, M B, Ch B Edin., D P H, appointed Medical Officer of Health for Falham

**WHITELOCKE, Hugh A B.** M Ch Oxon., F R C S Eng and Edin., appointed Honorary Surgeon Radcliffe Infirmary Oxford

**WILLIAMSON, Bruce**, M D Edin., M R C P Lond., appointed Honorary Physician in charge of the Outpatients' Department at the Royal Northern Hospital, Holloway N 7

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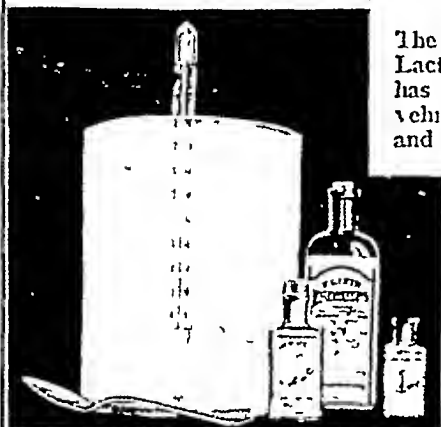
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Communications relating to the Editorial Department must not be addressed to any individual member of the Profession on the staff, but to The Editor "THE PRACTITIONER" Howard Street, Strand, London, W C 2

Original articles clinical lectures medical society addresses and interesting cases are invited, but are only accepted upon the distinct understanding that they are published exclusively in "THE PRACTITIONER". Unaccepted MS will not be returned unless accompanied by a suitable stamped addressed envelope



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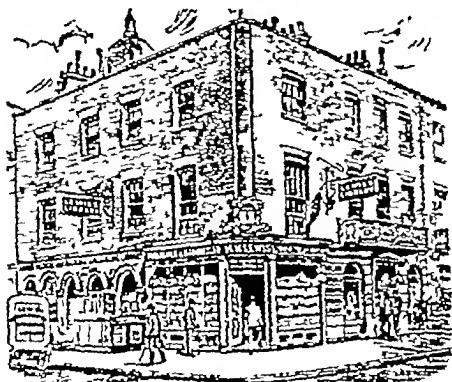
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